

~~The~~ REFRIGERATION & AIRCONDITIONING *Business*

NOVEMBER 1960



points
of view

on

**OFF-SEASON
SELLING**

"Off-season selling makes dollars and sense."

SEE PAGE 36

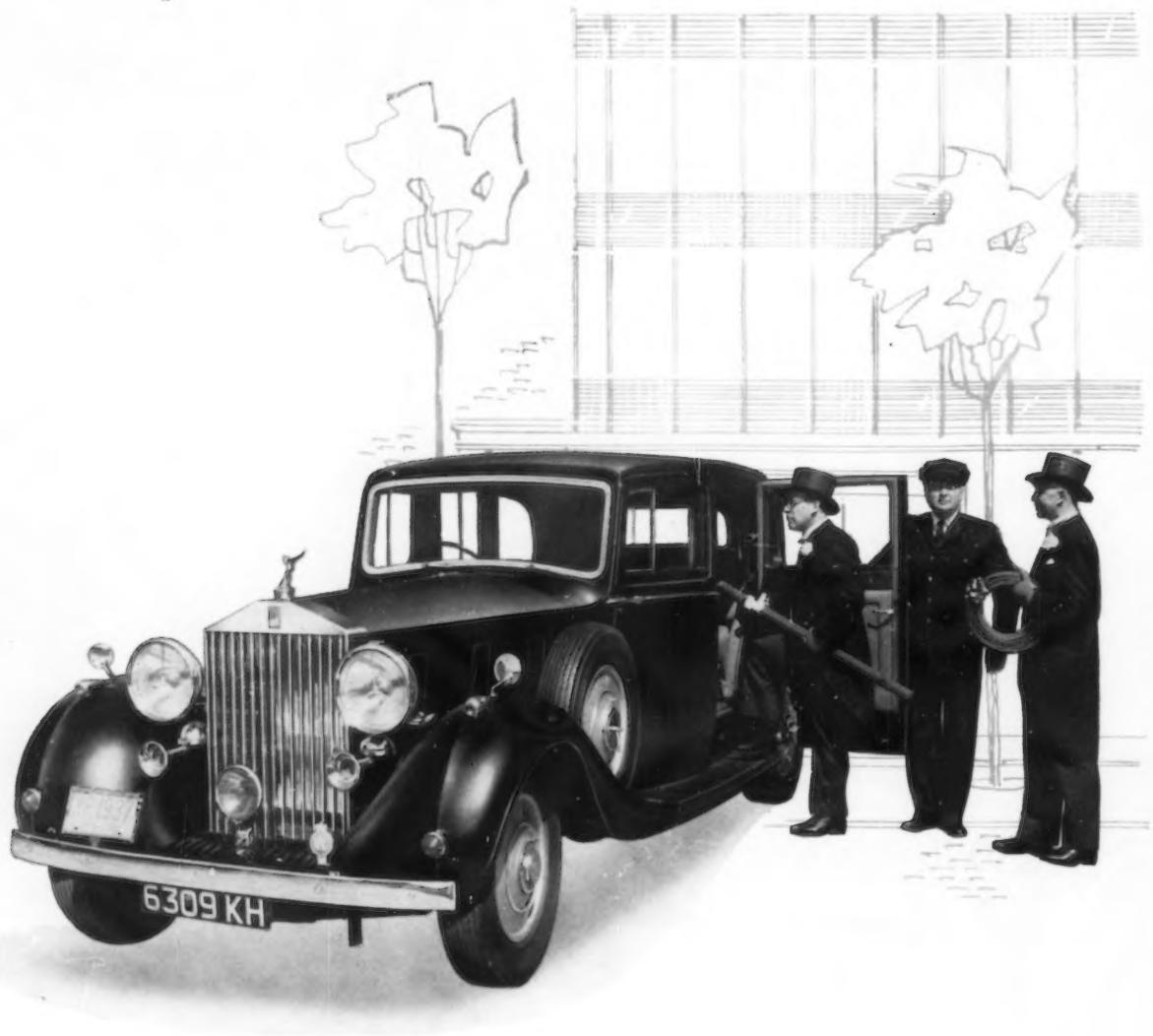
"Don't mention off-season selling to me!"

SEE PAGE 37

AN INDUSTRIAL PUBLISHING CORPORATION MAGAZINE

ALSO IN
THIS ISSUE

LET'S GET THE PROFIT BACK IN PLAN-AND-SPEC JOBS
AEROSOL PACKAGING NEEDS DUAL COOLING
WHAT YOU SHOULD KNOW ABOUT CONTROLLED ATMOSPHERE STORAGE



In Our Executive Fleet

Viking executives take a keen delight in getting behind the wheel of this Rolls Royce . . . not only because it is the epitome of quality . . . but because they feel it presents exactly the right background for the delivery of Viking Copper Tube. What better setting for a fine jewel than an elegant satin-covered jewel box?

VIKING copper tube co.
CLEVELAND 10, OHIO



The 1937 Phantom III, 12-cylinder Rolls Royce is a Classic. Formerly belonging to the Lord Mayor of Kingston-on-Hull, it is now in our service. Viking personnel, however, drive American made cars.
circle 56 on reader service card

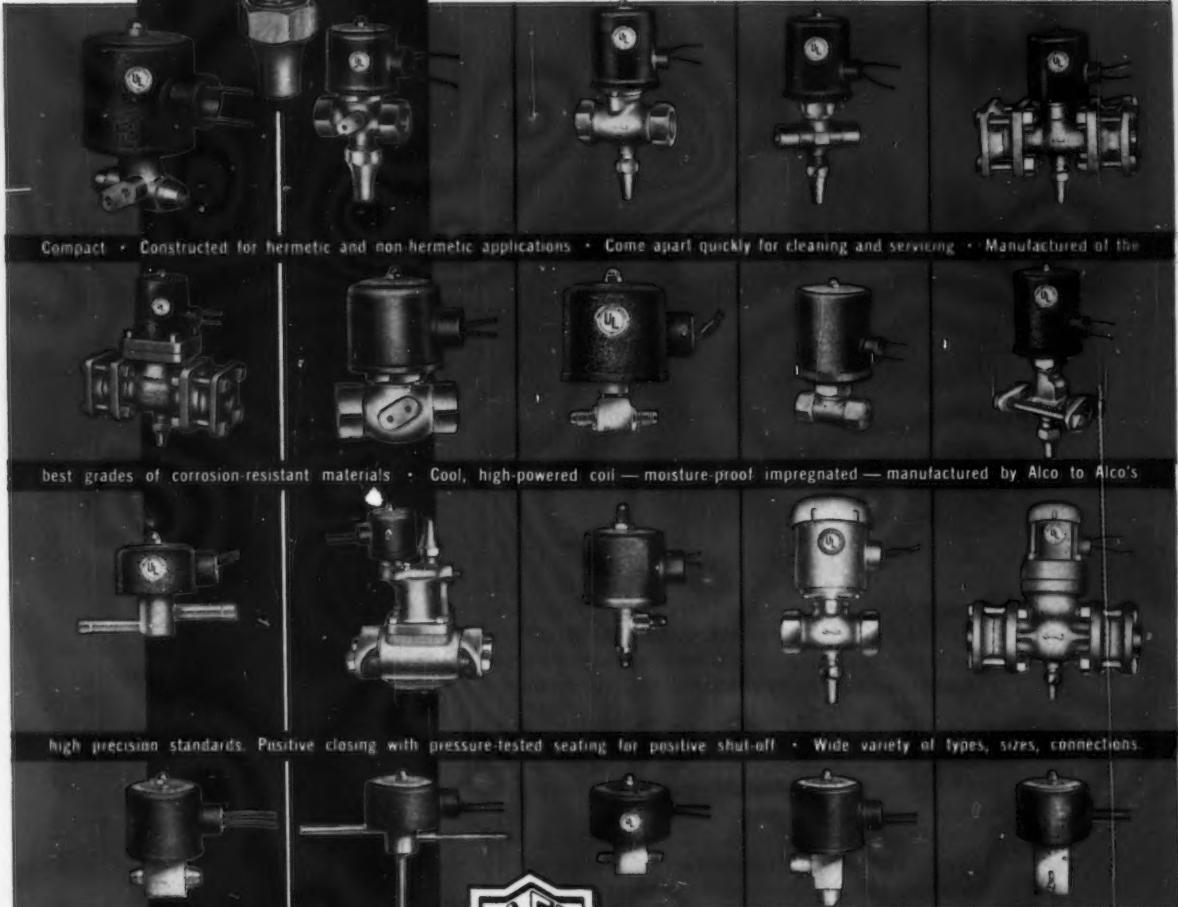


SPECIFY • INSTALL

ALCO SOLENOID VALVES

—for trouble-free performance . . .
for every refrigerant control application

LIQUID • SUCTION • HOT GAS
BRINE • WATER • STEAM • AIR



Call your Alco wholesaler.
Write for Specifications Bulletin No. 173-55



- BUY SECURITY
- BUY QUALITY
- BUY ALCO

ALCO VALVE CO.

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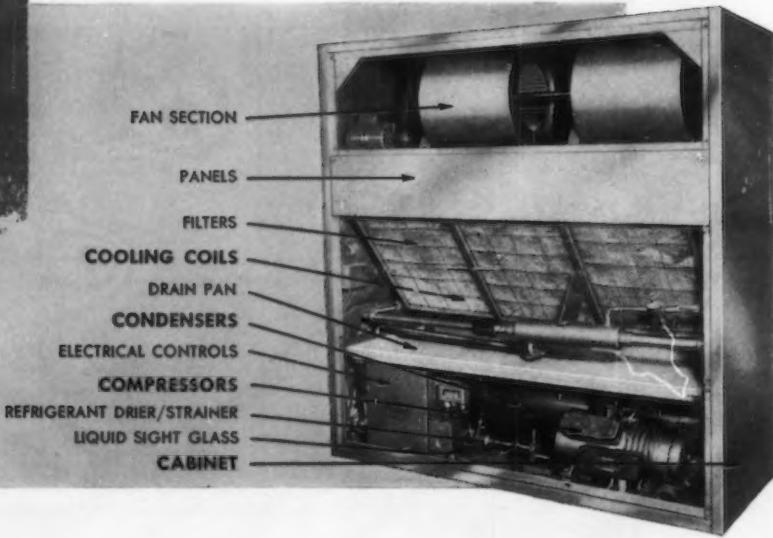
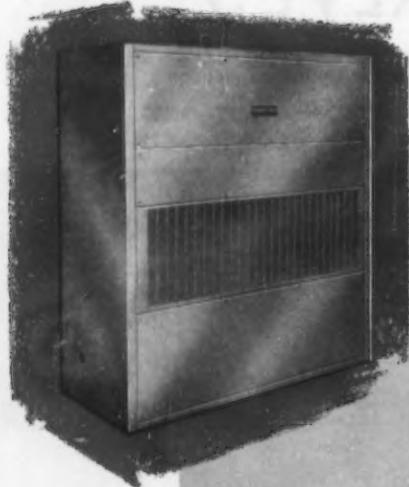
The one complete line of refrigerant controls: Thermostatic Expansion Valves • Refrigerant Distributors • Solenoid Valves
Refrigerant Filter-Driers • Suction Line Regulators • Flooded Evaporator Controls and Reversing Valves
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THE REFRIGERATION & AIRCONDITIONING BUSINESS/NOVEMBER 1960



DUNHAM-BUSH 'PAC'

Proves how to properly package air conditioning



Important to contractors and specifiers is peak performance of Dunham-Bush "PAC" Packaged Air Conditioners, achieved through pre-engineered major components. Other manufacturers, using components from diverse sources, must attempt to improvise balance. But Dunham-Bush manufactures and designs the motor compressor, condenser, evaporative coils and cabinet specifically for "PAC". This "one source-one responsibility" is evident in dependable operation and customer satisfaction.

"PAC" units are packaged for use, on-premises or remotely installed, in restaurants, stores, offices, clubs, banks, factories, depots or wherever high capacity, self-contained air conditioning units are required. Attractive finish harmonizes with decor practically anywhere.

"PAC" is available in 10, 15, 20, 25 and 30 h.p. capacities.

You'll want to have full details. Write today for Bulletin No. 6022 or request a copy from your nearby Dunham-Bush representative.

Dunham-Bush, Inc.

WEST HARTFORD 10 • CONNECTICUT • U.S.A.

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NOVEMBER 1960/THE REFRIGERATION & AIRCONDITIONING BUSINESS

reader's guide to



for November 1960

COVER FEATURE: In line with the election spirit, we're offering two points of view on one subject—off-season selling. Consulting editor George Webster tells how to sell profitably during off-season; Boston dealer Tom Barrett says there is no such thing as an off-season in selling.

FEATURES

JOHN S. ROBINSON
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editor

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associate editor

GORDON ANDERSON
assistant editor

SCHOLER BANGS
western editor

HENRY LEFER
eastern editor

ARTHUR H. FARR
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airconditioning

HUGO C. SMITH
consulting editor
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consulting editor
business management

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editorial assistant

ALARIC MAUSSER
art director

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Putting an end to bid shopping by prime contractors would help turn the trick

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... in first six months of 1960, latest ARI statistics show

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IMPORTANT



ANNOUNCEMENT

to people who
hear voices*



*voices that intrude or disrupt and noises that project when they should be hushed.

The new Aircoustat® Model W Return Air-Vent Silencers stop the transmission of noise without blocking air flow

Aircoustat Return Air-Vent Silencers eliminate the distracting sound of voices that spill from one area to another. Their slim design gives you a choice of installation. You can install them within a wall or ceiling or hang them on doors or walls. Let Koppers long experience in sound control help you. Write today for information to: KOPPERS COMPANY, INC., 3111 Scott Street, Baltimore 3, Maryland.



Model W
Return Air-
Vent Silencer

In sizes for all applications:

Model	Thickness	Width	Length
W-1	3½"	30"	48"
W-2	3½"	42"	48"
W-3	5"	30"	48"
W-4	5"	42"	48"
W-5	7"	30"	48"
W-6	7"	42"	48"



SOUND CONTROL
METAL PRODUCTS DIVISION

® Engineered Products Sold with Service
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NOVEMBER 1960/THE REFRIGERATION & AIRCONDITIONING BUSINESS

LOW-COST, EASY TO INSTALL, EASY TO SERVICE LINE

for Back Bars, Reach-Ins,
Direct-Draw Bars,
Under-Counters, Low Boys



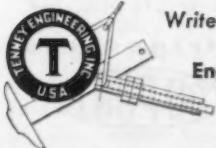
TENNEY all-new, all-aluminum mx unit coolers

- RUSTPROOF, LIGHTWEIGHT ALUMINUM CASE
- COIL CONSTRUCTION completely non-ferrous
- MINIMUM PRESSURE DROP CIRCUITING, conservative ratings
- AMPLE ROOM FOR TX VALVE
- EASY TO INSTALL, keyhole slotted hangers on unit

- FACTORY ASSEMBLED unit hangers, drain fittings
- 2-WAY MOUNTING standard factory equipment on MX-9 through 17
- QUIET, EFFICIENT fan and motor combinations
- LIFE LUBRICATED standard motors; easily replaced in field

Write for Bulletin 118-58

Engineers and Manufacturers
of Refrigeration and
Environmental Equipment



1090 SPRINGFIELD ROAD, UNION, NEW JERSEY

● PLANTS: UNION, NEW JERSEY AND WILMINGTON, NORTH CAROLINA
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THE REFRIGERATION & AIR CONDITIONING BUSINESS/NOVEMBER 1960

Tenney
ENGINEERING, INC.



REMEMBER . . .

... the bite of the ice pick splitting a block of ice . . . the clank of tongs . . . the heave of the ice cake to the iceman's soaking shoulder apron? Remember his dripping trail up the walk, across the porch and kitchen to the icebox? What an appetite it had for cakes of ice . . . remember? And "mop up those tracks . . . don't forget to empty the drip pan!"

While the iceman made his rounds years ago, scientists worked to perfect a safe refrigerant. In 1931 development of "Freon" refrigerant opened the door to progress that has put safe, efficient, carefree refrigeration into nearly every home in the country. Today, "Freon" stands first for quality and leadership in serving the refrigeration and air conditioning industries.

Just as "Freon" is the refrigerant you know and trust, you can be sure Du Pont will continue research and development of its products and packaging. Always look for new developments from Du Pont. E. I. du Pont de Nemours & Co. (Inc.), "Freon" Products Division, Wilmington 98, Delaware.

*Freon and combinations of Freon- or F- followed by numerals are Du Pont's registered trademarks for its fluorinated hydrocarbon refrigerants.

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*Capped in gold
and factory-sealed
for purity*

FREON*

*premium quality
refrigerants*



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

COPPER tube for automatic return-bend machine meets rigid specifications

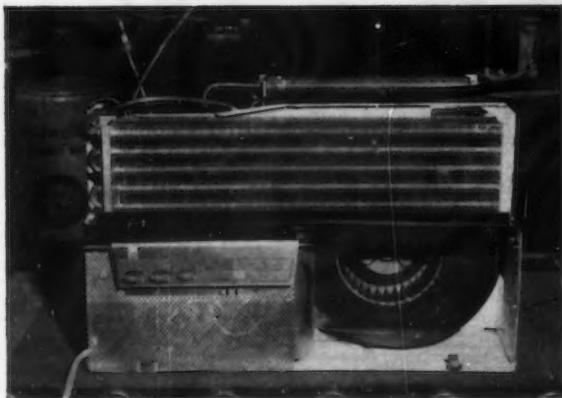


▲ Typical return bends formed from copper tube in the automatic machine shown at the right. Produced at high speed, these clean, uniform bends connect tubing in the condenser and evaporator unit of the Westinghouse Mobilaire Conditioner (below).

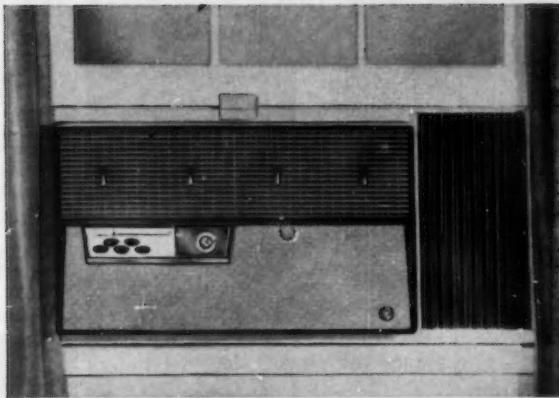
Automatic return-bend forming machine is fed copper tube, $\frac{3}{8}$ " O.D. x .017" gage. Anaconda furnishes soft copper tube of extremely high quality and uniformity required by Westinghouse. Long level-wound coils are on disposable reels.



Westinghouse achieves high-speed production with precision and quality in room air conditioners



Mobilaire unit with cabinet removed to show evaporator coil. Fins are mechanically bonded to hairpin-bend, hard-copper tubing of $\frac{3}{8}$ " O.D. x .016" gage. Anaconda provides the tube in exact lengths. Tube ends are flared, return bends (above) are inserted and silver-alloy brazed to complete the refrigerant circuit.



Westinghouse has established high standards for all materials used in its line of Mobilaire Conditioners as a basis for long, dependable operation. There are four models, each featuring an adjustable mobile frame for easy installation and removal, and a mobile cart accessory for moving it as required.

QUALITY tube and creative technical services. Whether you need hard or soft thin-wall copper tube, capillary or restrictor tube, or bulb and tube assemblies, Anaconda has the experience and facilities to produce the quality tube you require for economical manufacture. For further information or technical assistance, write: Anaconda American Brass Company, Waterbury 20, Connecticut.

ANACONDA®

COPPER TUBE FOR REFRIGERATION AND AIR CONDITIONING

Anaconda American Brass Company

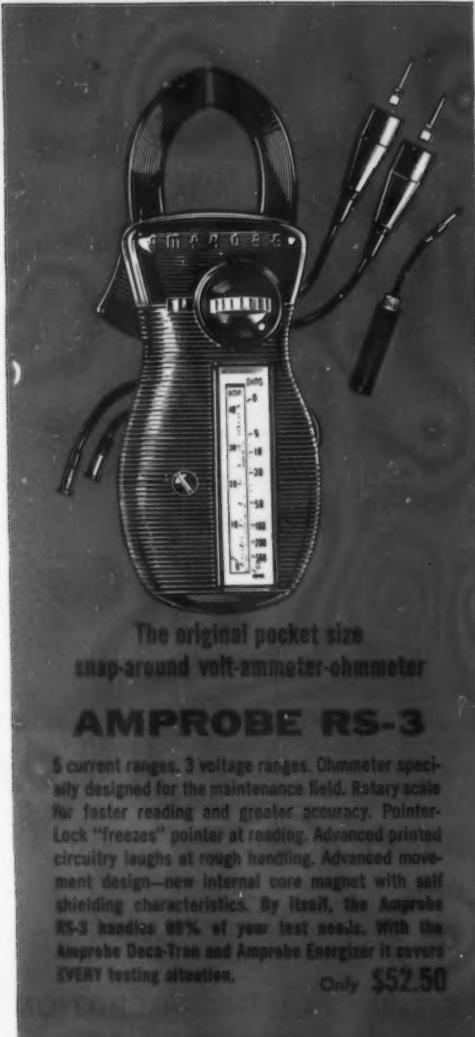
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THE REFRIGERATION & AIRCONDITIONING BUSINESS/NOVEMBER 1960

WORLD'S MOST WIDELY USED
ELECTRICAL TEST INSTRUMENTS

AMPROBE®

THE ONLY LINE THAT COVERS ALL YOUR TESTING NEEDS



The original pocket size
snap-around volt-ammeter-ohmmeter

AMPROBE RS-3

5 current ranges, 3 voltage ranges. Ohmmeter specifically designed for the maintenance field. Rotary scale for faster reading and greater accuracy. Pointer-Lock "freezes" pointer at reading. Advanced printed circuitry laughs at rough handling. Advanced movement design—new internal core magnet with self-shielding characteristics. By itself, the Amprobe RS-3 handles 90% of your test needs. With the Amprobe Deca-Tran and Amprobe Energizer it covers EVERY testing situation.

Only \$52.50



AMPROBE RS-1

The economy snap-around volt ammeter with many features of the great RS-3 including rotary scale, pointer lock, printed circuit, and advanced movement design. 4 current ranges. 2 voltage ranges.

Only \$39.85



AMPROBE JR.

The advanced voltage tester that gives you current, too. Available in seven models, ranging from 10 amps to 100 amps in either 125/250 or 150/600 volts. Choose the model that fits your job.

Only \$19.85



AMPROBE TEST-MASTER KIT

Keep all your electrical-test tools right at hand with this rugged, genuine cowhide leather carrying case. The Amprobe Test-Master Kit contains either the RS-3 or RS-1, the Amprobe Deca-Tran (extends amperage readings 10x; as high as 1200 amps), the Amprobe Energizer (multiplies sensitivity of any Amprobe 10x for readings on small appliances and fractional h.p. motors), and a separate covered section to hold your small hand tools within easy reach.

Model TM-33 (with the RS-3): Only \$84.50

Model TM-11 (with the RS-1): Only \$71.75

PYRAMID INSTRUMENT CORPORATION, LYNBROOK, N. Y. WORLD'S LARGEST MANUFACTURER OF SNAP-AROUND VOLT-AMMETERS.

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NOVEMBER 1960/THE REFRIGERATION & AIR CONDITIONING BUSINESS

as we see it

► The world's first big cooling machine for airconditioning use was shipped recently from Carrier's headquarters in Syracuse, N.Y., to Washington, D.C. Its companion in the railroad car was the 5000th big centrifugal refrigerating machine to be built by Carrier.

The antique cooling unit, developed by the late Dr. Willis Carrier in 1922 and installed at the Onondaga Pottery factory in Syracuse, was headed for the Smithsonian Institution where it will form the center of a refrigeration exhibition to open in a new wing of the museum.

The 1960 model will help aircondition the jet-age terminal building of Dulles International Airport, also scheduled to open sometime in 1961.

► Our campaign for a united industry educational effort at the vocational high school level (see the "Let's Talk Business" page of our July issue) hasn't made any great strides as yet, but there are some encouraging straws in the wind.

Almost everyone we've talked to about this idea—and we've done some talking in some pretty high places—has been encouragingly receptive. And educational efforts by individual companies and associations continue to crop up.

For instance, 27 students recently received certificates of completion from a comprehensive course in airconditioning and refrigeration sponsored by Friedrich Refrigerators, Inc.

Established in cooperation with San Antonio's Technical High School, the course was open to the public and consisted of three 48-hour units. Friedrich paid the tuition for all 27 students, 5 of whom were employees of the company.

Friedrich's purpose in spon-

soring the classes," explains president R. L. Harrison, "was to interest and train students in refrigeration and airconditioning."

And that's precisely the aim we have in mind in promoting this same sort of a program on an integrated industry-wide and nation-wide basis. If one company can accomplish as much as Friedrich has, just think what could be done in a program backed by the coordinated efforts of our entire industry!

► A full-fledged heat pump boom is keeping pace with Florida's mushrooming new homes market.

Tampa Electric Co. reports that 85% of the central airconditioning systems now being installed in its territory are heat pumps, compared with only 11% four years ago.

To promote heat pump use, the utility last year offered a \$5 bonus for every ton of heat pump capacity installed by a dealer. In just one month Tampa



Speed Service and Get a Cleaner, Drier System!

Kinney®

PORTABLE HIGH VACUUM PUMPS—

A better job—faster . . . that means completely satisfied customers and more service per man per day. It also means that with modern equipment your service operations turn in the profits you're now losing.

These KINNEY Portable units enable you to LEAK TEST . . . EVACUATE . . . DEHYDRATE Freon Refrigerating and Air Conditioning Systems in the shop or on location. The KC-3R, displacing 3 cfm at 1135 rpm, is especially suited to systems of 10 tons or less. The KC-8R, with free air displacement of 8 cfm at 1000 rpm, is the Pump for systems exceeding 10 tons. Each of these KINNEY Pumps includes: Bourdon type Vacuum Gage, automatic Vacuum breaker in case of power failure, male fitting for connecting to copper tube suction line, 10 ft. plug-in cord and snap switch and carrier handle.

KINNEY VACUUM DIVISION

THE NEW YORK AIR BRAKE COMPANY

3618L WASHINGTON STREET • BOSTON 30 • MASS.



Please send me Bulletin 4570.1 describing KINNEY Portable High Vacuum Refrigeration Service Pumps.

Write for Bulletin
No. 4570.1 and price
information today!

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

Electric paid out \$3500 for 700 jobs. As an added incentive, the utility installs a large, lighted billboard for any dealer who installs 100 heat pumps in a single year.

► The concept of airconditioning as standard, no-option equipment in moderate priced homes is really going big time.

Witness the decision of Levitt & Sons to install central year-

round airconditioning in every one of the 4500 homes it is building in Maryland's Belaire development. The fact that many of these full airconditioned homes will sell for as little as \$14,990 complete is pretty good proof that central airconditioning is no longer strictly a luxury item.

Equally significant is the fact that all of these airconditioning units will be certified under the Unitary Certification Program of Air-Conditioning and Refrigera-

tion Institute. ARI's managing director, George S. Jones, Jr., cites this as a milestone in acceptance of the certification program by builders.

► Talk about timing! Temperature Equipment Corp., Chicago, picked the only 100-degree day of the summer to introduce Carrier's 1961 product lines and programs to its dealers.

Carrier's new incentive program was heavily emphasized at this meeting. But what better incentive to sell airconditioning than weather that knocks the top off the thermometer?



FOR REAL PROTECTION AGAINST CALL BACKS

...use the *genie*
in the bottle of

THAWZONE®

To keep customers satisfied and to avoid costly call backs, add Thawzone to the refrigerant. In it, there's a chemical genie that works like no other dehydrant to cure and prevent trouble in air conditioning and refrigeration systems.

Thawzone actually destroys moisture. There is no water left in the refrigerant to return when the temperature rises. It works faster, reaches all parts of the system, gives sure results, and costs less to use...and there's no pressure drop.

Take Thawzone on every job...use it in every installation charged with the modern fluorine refrigerants (Freon®, Genetron®, etc.), or with methyl chloride, methylene chloride or isobutane. A little treats a lot...only $\frac{1}{8}$ oz. is needed for a pound of refrigerant.

- eliminates freeze-ups
- minimizes corrosion and copper plating
- destroys moisture and acids
- helps keep valves free of sludge and rust
- scavenges out oxygen

*Reg. Trade Names: Du Pont & Allied Chemical Corp.



Ask your refrigeration wholesaler today for Thawzone in the new SHO-PAK carton, and the free Thawzone Service Manual.



HIGHSIDE CHEMICALS INCORPORATED

4 COLFAX AVENUE • CLIFTON, NEW JERSEY

TWO OTHER AIDS
FOR YOUR
SERVICE
KIT



TRACE — the simple fast way to pinpoint refrigerant leaks...a positive leak tag.



Leak Lock — the joint sealer engineered for refrigeration use.

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"My husband fixed our unit himself—so I'm here for a new one!"

F-13 Now Available From 700 Wholesalers

Low-temperature refrigerant Freon-13 can now be obtained through 700 wholesalers, rather than being handled as a development product through a limited number of E. I. Du Pont warehouses.

The company also announced substantial reduction in the price of F-13 to original equipment manufacturers. These manufacturers buy direct from Du Pont. On the average, prices will drop more than \$1 a pound.

YOUR WHOLESALER
CAN SERVE YOU — LET HIM!



HERE'S WHY SO MANY ENGINEERS SPECIFY

Phelps Dodge Copper Tube for refrigerating, air conditioning and heating units!

1 Phelps Dodge has complete control of its copper tube from original source to finished product. The copper used in Phelps Dodge tube comes from Phelps Dodge-owned open-pit mines, is smelted in Phelps Dodge refineries and fabricated in modern Phelps Dodge mills. This overall Mine-to-Market control is assurance of highest quality and finest workmanship.

2 Phelps Dodge devotes particular attention, throughout fabrication, to uniform anneal for tube

flaring and careful control of die draw for close tolerance.

3 Phelps Dodge can supply maximum tube lengths and precise wall thicknesses engineered to customer specifications; straight length tube tempered to meet bending and expanding requirements.

4 Phelps Dodge multiple mill operation guarantees a steady source of tube supply to meet the needs of manufacturers and distributors of refrigerating, air conditioning and heating equipment.

*It's the famous Mine-to-Market Quality Line . . .
sold the quality way—through authorized wholesalers!*



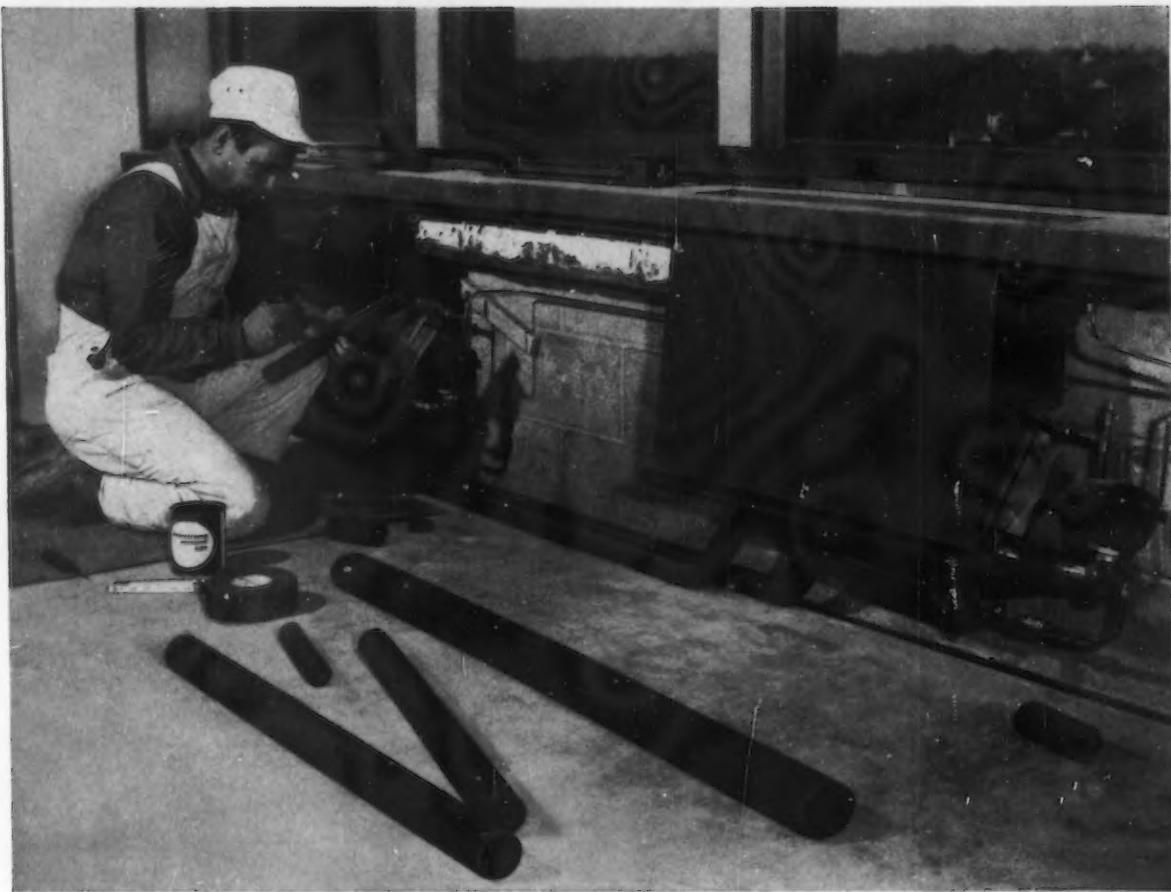
PHELPS DODGE COPPER PRODUCTS

CORPORATION

New York, N.Y. • Los Angeles, Calif.

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Here's one cold line that will not sweat

Condensation on cold lines can be stopped—surely and economically—with Armstrong Armaflex 22 Pipe Covering. New improved Armaflex 22 is a flexible foamed plastic insulation with better vapor resistance, durability, and appearance—plus a wider temperature range than other insulations of this type.

New Armaflex 22 offers complete protection against water and water vapor. Applied in recommended thicknesses to any cold lines, it stops damaging condensation. No finish is needed on indoor installations. And you can be proud of the appearance of a job done with Armaflex 22. A new, super-smooth surface gives you a neater installation.

Armaflex 22 can be applied not only to all cold lines, but also to heated piping operating to 220° F. That means that on jobs where hot water, chilled water, refrigeration, and dual temperature lines are involved, this one insulation can be used throughout to simplify the installations.

The only tools needed to apply Armaflex 22 are a miter box, knife, brush, and can of Armstrong 520 Adhesive.

Complete information on Armaflex 22, explaining in detail why it is a superior insulation of its type, is contained in a new booklet. Write for your free copy today to Armstrong Cork Company, 2211 Roth Ave., Lancaster, Pa.

Armstrong INSULATIONS

1860-1960 Beginning our second century of progress

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NOVEMBER 1960/THE REFRIGERATION & AIRCONDITIONING BUSINESS

HELP SCIENCE FIGHT TB

ANSWER YOUR
CHRISTMAS
SEAL LETTER
TODAY!



ABOUT People

New vice president of operations at Ansul Chemical Co. is **Robert W. Reinicke**. He comes to his new position from Ekco Products Co., where he also was vice president. He has been associated with Chase Brass and Copper Co. as a plant manager.



Mark M. Biddison, 68, former president of Allied Chemical's General Chemical Div., died recently at Sarasota, Fla., where he had lived since his retirement in 1957. Biddison's career with General Chemical spanned 39 years. He joined the division's sales department in 1918, and later became manager of the Cleveland office and division sales manager. Starting in 1934 he served successively as assistant general manager, general manager, and vice president. He became president in 1952 and continued in this capacity until 1955, when he assumed an advisory role. General Chemical experienced its most active growth period during the post-war years under Biddison's leadership. It was during this period that the company moved to commercialize its "Genetron" line of refrigerants and aerosol propellants.

Silver Refrigeration Mfg. Corp. has announced the naming of **Joseph P. Durkin** as its factory representative for New York City and the state of New York.

As part of an expanded sales program, Day & Night Mfg. Co. has added **Al Christiansen** to the company's southwest sales force as district manager. He will

headquarter in Fort Worth, Tex., and will direct heating and air-conditioning sales in western Texas.

L. Byron Youmans has been announced as northeastern district sales manager for Welbilt Air Conditioning & Heating Corp. Youmans' district includes Fairfield county, Conn.; Ulster, Orange, and Dutchess counties, N.Y., and northern New Jersey. A second district sales manager recently appointed by Welbilt is **David B. Farnum**, who will be in charge of sales in Michigan and sections of Ohio and Indiana.

C. Freeman has been appointed manager of advertising and sales promotion of Worthington Corp. Freeman had been account manager for the company's engineered products divisions since 1955. He joined Worthington in 1953 to initiate a line of external technical publications.



Three changes in advertising and sales promotion personnel have been announced by Airtemp Div., Chrysler Corp. **Lee Epley**, formerly sales promotion manager, has been named advertising manager. Succeeding Epley is **Carl T. Miller**, former



Epley



Miller

advertising production supervisor. Miller has been replaced by **John F. Zaino**, previously an advertising copy writer for Airtemp.

Arthur Noll has been appointed sales representative for Mueller Climatrol Div., Worthington Corp., for the South Dakota area.

Northeastern sales manager and southeastern sales manager are the new titles of **E. D. Farrell** and **D. D. Williams**, Coolerator Div., McGraw-Edison Co. Farrell, former midwest regional sales manager, will head divisional sales in New England, New York, Pennsylvania, New Jersey, Maryland, and Washington, D.C. Williams' territory is



ENGINEERING STAFF and sales force of Alco Valve Co. attended the firm's 2-day Engineering Conference at the Coronado Hotel, St. Louis, Mo. Discussion centered around technical aspects of a new, exclusive refrigerant block form desiccant, combining silica gel P.A. 400 and molecular sieve. Guest speaker was Dr. Walter O. Walker, who worked with Alco's research laboratory in developing the product. Dr. Walker is dean of the research and industry division, Industrial Chemical Research Laboratory, University of Miami, Miami, Fla.

Crystal Tips

MODEL B-500-B ICE MAKER

the *quality*
ice maker
for the
quantity ice user

It's always easier to satisfy the ice requirements of large volume ice users by installing Crystal Tips 2-in-1 ice makers, model B-500. These models (air or water cooled) are real producers! They make, deliver and store up to 525 pounds of ice a day (that's more than 9000 ice cubes or 36,000 ice chips). No other ice maker of similar size or price can match this record ice production!

Besides being a producer the B-500's feature Crystal Tips exclusive 2-in-1 ice service; big (320 lbs.) stainless steel lined storage bins; dependable, trouble-free operation and fast, simple installation.



First name in automatic ice makers.

**AMERICAN AUTOMATIC
ICE MACHINE CO.**
1671 Park Ave., Faribault, Minn.
EDISON 4-5501



A Division of McQuay, Inc.

We want more top notch distributors who want to sell top notch ice makers. Clip and mail coupon today for details about Crystal Tips Distributor Profit-Making Opportunities.

Send me details about Crystal Tips distributor program.

Name _____

Address _____

City _____ State _____

Virginia, North and South Carolina, Georgia, Alabama, Mississippi, Tennessee, and Florida.

Three district sales managers have been named by Perfection Div., Hupp Corp. John Schlemmer will cover northern California, Washington, and Oregon operating out of Sacramento, Calif. Harold Kreegel, whose territory will be Texas and Louisiana, will headquartered in Hous-

ton, Texas. James C. Pope will head the sales force in the Southeast from Charlotte, N.C.

Two promotions have been made in the sales force of Danville Div., Bohn Aluminum and Brass Corp. Charles Simison moves up from field sales engineer for unitary coils to sales manager of the unitary coil department. B. W. Reid has been named sales manager of

the heating and airconditioning department. Simison will travel nationally in promotion of unitary coils and in appointment of

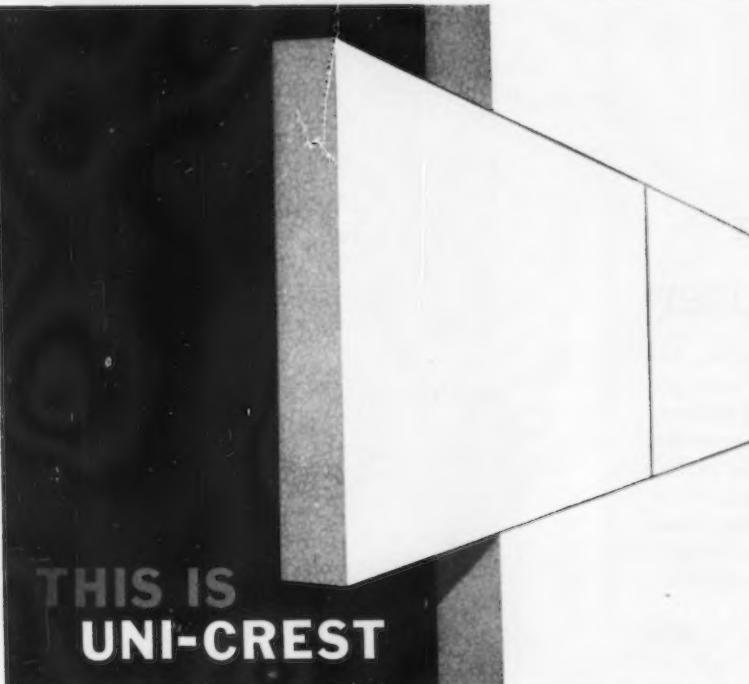


Simison



Reid

Danville Div. representatives. Reid will promote Bohn sales nationally. He was formerly a Bohn representative in Kansas, Missouri, Nebraska, southern Iowa, and southern Illinois.



a new, economical, low temperature insulation

Uni-Crest is an extremely lightweight homogeneous white material with a smooth, tough surface. It is composed of minute, individually closed cells, produced by expanding beads of polystyrene. Its inherent properties make it an excellent low temperature insulating material.

Uni-Crest has a low K factor (thermal conductivity) and retains its insulating value indefinitely. Lightweight, strong, flexible, it has

excellent bonding characteristics, is non-dusting and non-flaking, and can be cut and handled easily. Uni-Crest is inexpensive, too.

Uni-Crest is available in widths up to 4', lengths to 12', and thicknesses from 1" to 8". Self-extinguishing Uni-Crest is also available in the same sizes. Write today for complete specifications and installation information.

UNI-CREST

7 Central Avenue, Kearny, New Jersey

DIVISION UNITED CORK COMPANIES

Since 1907  UNI-CREST

Engineering offices or approved distributors in key cities coast to coast.

circle 55 on reader service card

16

New general sales manager for distributor sales in the industrial insulations division of Johns-Manville Corp. is M. W. Burleson. He will head the sales and distribution of J-M products through nine sales offices. He continues as a vice president of Johns-Manville Sales Corp.

George L. Freeland, Jr., has been appointed sales representative in the Denver, Colo., area by Janitrol Heating & Air Conditioning Div., Midland-Ross Corp. Freeland was previously a sales engineer with the firm in Dallas, Texas.

New sales manager of the plumbing division of Imperial Brass Mfg. Co. is Charles O. Engels. He has been associated with Imperial in sales since joining the company in 1935. Engels has been assistant manager of

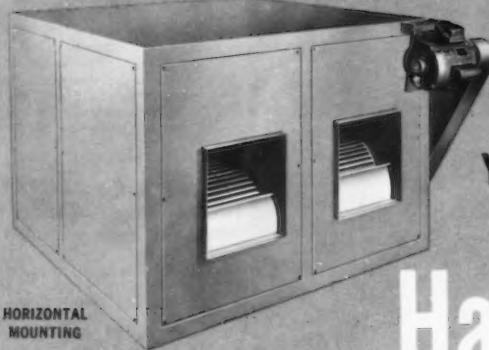


the plumbing division.

Donald H. Swartz has been named marketing development manager by York Div., Borg-

circle 18 ►

CLIP THIS FOR
YOUR FILES



HORIZONTAL MOUNTING

Halstead & Mitchell central system air conditioners

that are built to last!



VERTICAL MOUNTING

YOU CAN COOL AND DEHUMIDIFY,
HEAT AND HUMIDIFY, FILTER
AND CIRCULATE AIR FROM
THESE COMPACT H&M
CENTRAL SYSTEM AIR CONDITIONERS.

AVAILABLE IN 3 TO 92 NOMINAL TONS
AND WITH MATCHING HEATING COILS.

LOOK AT THE CHOICES YOU GET:

1. **H&M Turbu-Flo coils** with right or left-hand connections.
*Direct Expansion Cooling Coils Chilled Water Cooling Coils
Non-Freeze Steam Heating Coils Hot Water Heating Coils
Standard Steam Heating Coils*
2. Capacities of 3 to 92 nominal tons with 880 to 47,750 CFM.
3. Cooling coils of 1 to 8 rows; heating coils of 1 or 2 rows.
4. 3 choices of coil face areas for each model.
5. Fin spacings of 6, 7, 8 or 10 fins per inch.
6. Horizontal or vertical mounting; discharge in any direction.
7. Variable Pitch drives on most units for close adjustment of air quantities.
8. Face and bypass dampers to provide desired leaving air conditions.
9. Mixing boxes (with or without dampers) to control proportioning of ventilation and return air.
10. High or low velocity filter sections use throw away or cleanable type filters.
11. Spray or steam grid humidifiers for proper addition of moisture.

HERE'S WHY THESE H&M UNITS WILL ALWAYS GIVE TOP PERFORMANCE:

1. Formed corner posts of heavy gauge steel provide a rugged frame.

2. Flush-mounted panels look better, are easily removable for quick servicing.
3. Fully insulated cabinets assure quiet operation; are attractively finished.
4. Permanently sealed ball bearings on fans require no lubrication or servicing.
5. Double width, double inlet centrifugal fans handle large air quantities against static pressures up to 2 inches water column. Fans are statically and dynamically balanced for quiet running.
6. Heavy duty fan motors are standard NEMA frame sizes and are positively mounted on adjustable bases.
7. Sound-dampening vibration isolators are available for all units.
8. Halstead & Mitchell Turbu-Flo coils have an exclusive streamline fin pattern for better heat transfer.

HM
Halstead & Mitchell

Central System Air Conditioners • Cooling Towers
Air-Cooled Condensers • Water-Cooled Condensers • Finned Coils

CONDENSED DATA ON

H & M CENTRAL SYSTEM AIR CONDITIONERS

MODEL NO. CODE

11 H AH 2



2 sq. ft. of
face area

Air Handler

Horizontal Cabinet
(V for Vertical)

1100 CFM @ 500 FPM
at standard conditions

MODEL NO.	NOMINAL TONS*	BASIC CFM (at 500 FPM)	CFM RANGE (400 TO 700 FPM) LOW TO HIGH	NO. OF BLOWERS	FACE AREA, Sq. Ft. STD. MED. LARGE
11 AH 2	3.0	1,100	800 to 1540	1	2.2 2.4 3.0
15 AH 3	4.0	1,500	1200 to 2100	1	3.0 3.3 3.9
21 AH 4	5.5	2,100	1680 to 2940	1	4.1 4.5 5.1
31 AH 6	8.1	3,100	2480 to 4340	1	6.0 6.3 7.2
36 AH 7	9.7	3,600	2880 to 5040	1	7.3 8.2 9.2
47 AH 9	12.7	4,700	3760 to 6575	2	9.4 10.1 11.3
62 AH 13	16.9	6,250	5000 to 8750	2	12.5 13.3 14.5
79 AH 16	21.4	7,900	6325 to 11100	2	15.8 18.8 20.2
108 AH 22	29.4	10,800	8700 to 15500	2	21.8 24.0 25.6
118 AH 24	31.7	11,850	9500 to 16600	2	23.7 27.4 29.3
146 AH 29	39.4	14,600	11657 to 20200	2	29.2 32.0 34.0
177 AH 35	47.8	17,700	14150 to 24800	2	35.4 38.3 40.3
238 AH 48	64.2	23,800	19000 to 33200	2	47.5 49.0 51.4
290 AH 58	78.4	29,000	23200 to 40500	2	57.9 61.0 63.8
340 AH 68	91.8	34,000	27200 to 47750	3	68.0 75.7 78.5

*Nominal Tons are based on Entering Air conditions of 80° D.B., 67° W.B.; Leaving air conditions of 60.2° D.B., 56.8° W.B.; 4-row coil; 500 FPM face velocity; 40° refrigerant temperature; standard coil face area with 7 fins per inch. For capacities with other coil sizes or fin spacings, refer to Bulletin AHU-100.

†For standard coil face area.

EXAMPLE of capacity range:

Model 47AH9 at standard air and refrigerant conditions

CFM ranges from 3,760 to 6,780. Face areas available are 9.4, 10.1, 11.3 sq. ft. Cooling coil depth from 3 to 8 rows; heating coil depth, 1 or 2 rows. Fin spacing of 6, 7, 8 or 10 fins per inch.

Minimum capacity is 8.93 tons

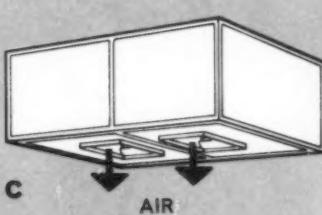
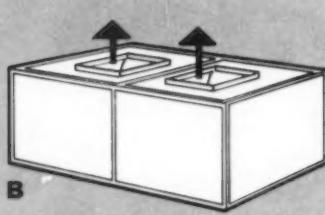
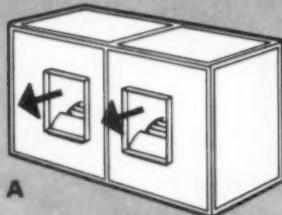
Based on 400 FPM, 3,760 CFM, 3-row cooling coil, 6 fins per inch, 9.4 sq. ft. face area.

Maximum capacity is 28.1 tons

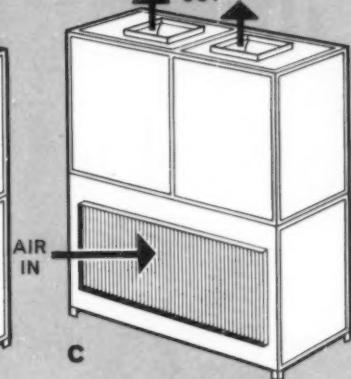
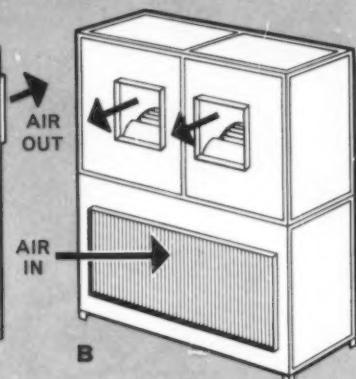
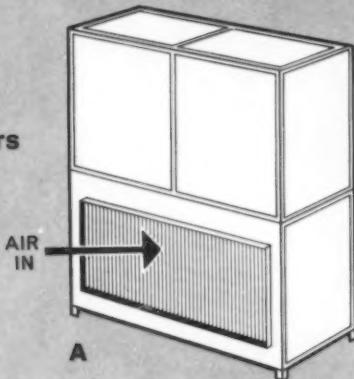
Based on 600 FPM, 6,780 CFM, 8-row cooling coil, 10 fins per inch, 11.3 sq. ft. face area.

CHOOSE THE MOUNTING ARRANGEMENT YOU WANT:

HORIZONTAL UNITS

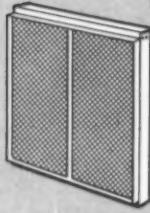


VERTICAL UNITS

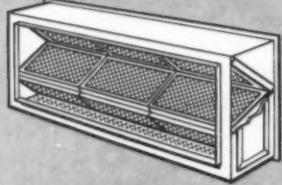


CHOOSE THE ACCESSORIES YOU NEED:

FILTER SECTIONS



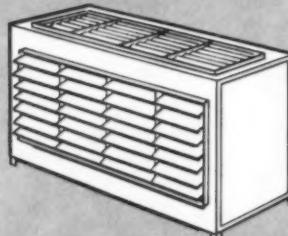
HIGH VELOCITY



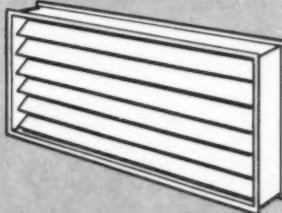
LOW VELOCITY

(throw away or cleanable filters may be used with either type section)

MIXING BOXES



FACE and BYPASS DAMPERS



BULLETIN AHU-100 CONTAINS COMPLETE PRODUCT INFORMATION. WRITE FOR A COPY AND FOR PRICES

HALSTEAD & MITCHELL CO. • BESSEMER BLDG. • PITTSBURGH 22, PA.

J-0531 Litho in U.S.A.

Warner Corp. He joined York in 1953 and has been in field sales, product development, and an instructor in the firm's graduate engineer trainee program.

Ansel F. Hosmer, Jr., has been named district engineer in Detroit, Mich., by Niagara Blower Co., succeeding the late Nicholas L. Baker, who held the post since 1928.

Forrest L. Jerome has joined Worthington Corp. as national supervisor of contractor sales. He was president of Columbia Equipment Co.

William S. Orton has been appointed field representative in



northern California for General Control Co.'s air conditioning refrigeration controls division. He will maintain offices in San Francisco, Calif. Orton was sales engineer for Fabricated Metals Co., San Leandro, Calif., and president of Nels H. Rosberg, Inc., San Francisco.

Henry W. Kuklinski has been named engineering manager for transportation airconditioning and refrigeration equipment at Carrier Corp. He joined the firm in 1952 and was formerly senior development engineer in transportation.

Two field engineers in the Syracuse, N.Y., and Chicago, Ill., areas have been appointed by Metals & Controls Div., Texas Instruments, Inc. They are Don Pasko, Syracuse, and Larry Phelps, Chicago.

Two new sales representatives have been named by C. A. Olsen Mfg. Co. James A. Bradley will

cover Florida, Georgia, and Alabama while Stephen J. Cheney will represent Olsen in New England.

Van W. Bearinger has been named director of research for Minneapolis-Honeywell Regulator Co. and two other scientists have been promoted to posts as assistant research directors. Bearinger has been associate research director since 1956. The

new assistant directors under Bearinger are John N. Dempsey and Edward E. Rexer.

District sales representative in the Cleveland, Ohio, area for Janitrol Heating and Air Conditioning Div., Midland-Ross Corp., is Arnold G. Schwenk.

Robert B. Starnes has been elected president of Mathes Co., Div., Glen Alden Corp. Starnes

Here's a new tool which no motor service technician should be without! It's the time-saving, work-saving Sprague M-2 MIKE-O-METER, which speeds and simplifies capacitor testing in the electric motor service field.

This handy little instrument measures only 9" x 6" x 5 3/4", and weighs a mere 6 lbs.—it goes where you go! A twist of a dial tells you whether capacitors are good or bad, measuring capacitance and power factor of any capacitor from .1 to 2000 MF by the high accurate Wien Bridge

method. A "magic-eye" tube permits easy bridge bal-



FREE! Catalog C-912a contains listings of replacement capacitors for A-C applications, including late-model air conditioners. Write for your copy today!

ancing, and readings are taken directly from calibrated scales.

The M-2 MIKE-O-METER has 2 new built-in safety features—no voltage appears at the test terminals unless the test switch is held. Upon release, any residual charge on the capacitor is automatically discharged.

Built for rugged service, the components inside the sturdy steel case are especially chosen for long, dependable life. Complete \$32.50 with operating manual, the M-2 has a net price of ONLY

\$32.50

See your Sprague Distributor or else order from Sprague Products Company, 53 Marshall St., North Adams, Massachusetts.

don't be vague...insist on

SPRAGUE

world's largest capacitor manufacturer

circle 47 on reader service card

was promoted to regional sales manager. In 1958, he became vice president and general sales manager.

Appointment of James E. Cohen as sales engineer for the San Francisco, Calif., area has been announced by Acme Industries, Inc.

Two new district sales managers have been named by Taco

Heaters, Inc. Kendall Fiske will head the Chicago, Ill., office. He was formerly a sales engineer with the firm. Richard K. Burgess will move up from sales engineer to manage the Philadelphia headquarters.

Four new men have been named managers of as many Trane Co. offices throughout the country. James M. Ballard, Jr. will head the Birmingham, Ala., office; Marvin R. Clemons will

be in charge at Pensacola, Fla.; Louis J. Boland is to head the Bethesda, Md., branch, and W. F. Delany will direct the Detroit, Mich., office.

Three sales representatives in the midwest have been named by Wolverine Tube Div., Calumet & Hecla, Inc. The new Missouri representative, covering western Missouri and Kansas, is Edward F. Sweeney, who had been

district sales representative since 1955. Travis E. Mosier will be Wolverine's head salesman in Moline, Ill. He was formerly



Sweeney



Mosier

Chiddister

sales representative in the Chicago, Ill., area. Robert L. Chiddister will replace Mosier.

Penn Controls Ltd. of Canada has named E. T. Coles as sales manager for Canada. He is national secretary of RSES (Canada), a director of the Canadian Refrigeration Manufacturers Assn., and a member of ASHRAE.

The Trane Co. has appointed two new department managers. James E. Kuppe has been named manager of residential airconditioning sales, and Frank A. Votava as manager of the market research department.

Kenneth DeBaun has been appointed manager of Farr Co.'s appointed manager of the new San Francisco, Calif., office, recently opened by Farr Co.

HANSEN
SERIES HK[®] QUICK-CONNECTIVE
TWO-WAY SHUT-OFF COUPLINGS

QUICK CONNECTION
with instant automatic flow

QUICK DISCONNECTION
with instant automatic shut-off
... prevents loss of liquid, gas, or pressure

To connect a Hansen Two-Way Shut-Off Coupling, you merely pull back the sleeve and push the Plug into the Socket. To disconnect, just pull back the sleeve. No tools required. When Coupling is disconnected, similar valves in Socket and Plug shut off both ends of line—practically eliminating spilling of liquid or escape of gas at instant of disconnection.

Available in brass or steel, with female pipe thread connections from 1/8" to 1 1/2" inclusive.

Representatives in Principal Cities
See Yellow Pages



SINCE 1915
THE HANSEN

QUICK-CONNECTIVE FLUID LINE COUPLINGS
MANUFACTURING COMPANY

4031 WEST 150TH STREET • CLEVELAND 35, OHIO

circle 19 on reader service card



for PEAK PERFORMANCE... . . .

SPORLAN VALVE COMPANY

EXPORT DEPT. 85 BROAD STREET NEW YORK 4, N. Y. 7525 SUSSEX AVENUE ST. LOUIS 17, MISSOURI
circle 46 on reader service card

THE REFRIGERATION & AIR CONDITIONING BUSINESS/NOVEMBER 1960

SPORLAN TVT G VALVES...

the No. 1 choice for
Refrigerated Cases,

utilize
SPORLAN
SELECTIVE CHARGES...

famous since 1934

SPORLAN "C" CHARGE

for Suction Temperatures
Above ZERO

SPORLAN "Z" CHARGE

for Suction Temperatures
Below ZERO

SPORLAN "X" CHARGE

for Extremely Low Temperatures

More engineering features
are incorporated in the
Sporlan G valve
than in any other valve...
yet the basic design has
always been sound...
and has never been changed.

Modifications will always be
made, but only to improve the
valve... never to change it.

on all refrigeration applications,
send for new bulletin 10-10 today
...then order your G valves from
your friendly Sporlan Wholesaler.

**we'll
eat
this
ad...**

**if any
other
manufacturer
can equal
TYPHOON'S
1961 Profit Program
for you!**

The Industry's Biggest Line of Packaged Units. Typhoon adds 28 new units to its 1961 line of air conditioners, furnaces, heat pumps. Unmatched versatility and scope! A superior Typhoon unit for every need—a solution for every installation problem. As always, Typhoon leads in engineering!

Most Flexible Line. Only Typhoon gives you customized units at little or no extra cost. Mass produced components custom-assembled to your order gives you a tremendous competitive advantage. You can sell without sacrificing profit.

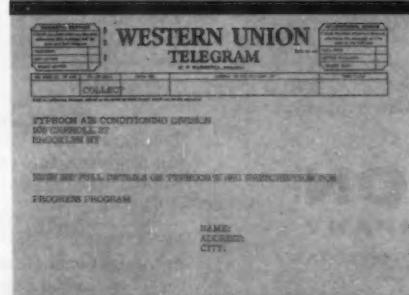
Outstanding Financing Plans. Typhoon again gives you every plan necessary to simplify payment for your customers, while relieving you of financial strain. Helps you stock and sell.

All-Out Sales Effort. Typhoon trains your salesmen. Helps you sell, locally. Does your selling for you, nationally, to headquarters of major chains.

"Prescription for Progress." For 1961, Typhoon dealers are following a master plan for profit—Typhoon's "Prescription For Progress." National advertising. Local promotions. Specialized programs aimed at helping you sell in the Commercial, Industrial, and Residential markets. A wealth of material, carefully planned, skillfully executed...to give you the ammunition you need to make more, more easily. It's all in Typhoon's "First Aid For Sales" Kit.

Top Travel Awards. An unlimited number of Jamaica vacations available for the winning. All it takes is your salesmanship. We call it "Jamaica Jamination"—you'll call it "taking candy from a baby." That's how easy it is to win!

Study the facts and you'll agree: in every way, Typhoon dealers enjoy a considerable advantage in product engineering, promotions, and profits. For more information, and a brand new Reference Wall Chart on the "Complete Line," use the collect telegram in this ad. Or call or write us.

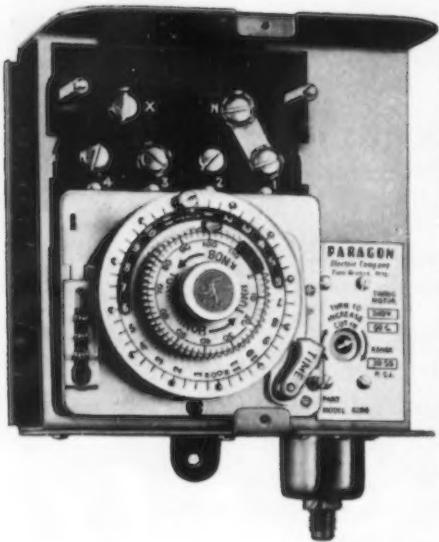


Typhoon Air Conditioning Division / Division of Hupp Corporation / 505 Carroll Street / Brooklyn 15, New York
circle 54 on reader service card

PARAGON'S 8200 SERIES

D-FROST-O-MATIC®

has more exclusive features for more
precise, safer defrost control



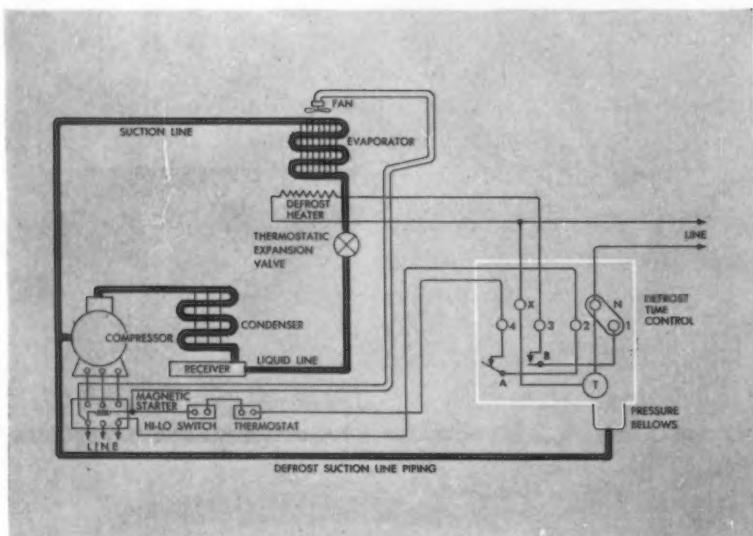
EXCLUSIVE: Length of defrost cycle determined by pressure increase . . . not by time.

EXCLUSIVE: 100% adjustable fail safe protection. Will transfer switch if equipment is not brought back into a refrigeration cycle by an increase in pressure within a specified period of time. Pressure cut-in is adjustable too.

EXCLUSIVE: Heavy-duty, self-starting, 4-watt industrial-type motor.

EXCLUSIVE: Adjustable pressure cut-in.

For complete details write for
BULLETIN NO. 5949.



PARAGON
ELECTRIC COMPANY

1827 Twelfth St. • Two Rivers, Wis.

TIME IS MONEY...CONTROL IT WITH PARAGON

circle 40 on reader service card

Calendar of Industry Events

November 7-11, 1960

National Hotel Exposition
The Coliseum
New York City

November 14-16, 1960

National Warm Air Heating and
Air-Conditioning Association
(Annual Convention)
Statler-Hilton Hotel
Cleveland, Ohio

November 14-18, 1960

National Electrical Manufacturers
Association (Annual Meeting)
Traymore Hotel
Atlantic City, N. J.

November 18-22, 1960

Air-Conditioning & Refrigeration
Institute (Annual Meeting)
Hollywood Beach Hotel
Hollywood Beach, Fla.

November 19-22, 1960

Refrigeration and Air Conditioning
Contractors (Annual Convention)
Fontainebleau Hotel
Miami, Fla.

November 27-30, 1960

Northamerican Heating & Air Conditioning
Wholesalers Association
(Fall Convention)
Statler Hilton Hotel
Detroit, Mich.

November 27-29, 1960

National Commercial Refrigerator
Sales Association
(Annual Convention)
Royal Orleans Hotel
New Orleans, La.

December 1-2, 1960

National Association of Practical Re-
frigerating Engineers, Inc. (An-
nual Meeting)
Sheraton-Jefferson Hotel
St. Louis, Mo.

January 29-February 2, 1961

National Association of Home
Builders (Annual Convention &
Exposition)
Exposition Center
Chicago, Ill.

February 13-16, 1961

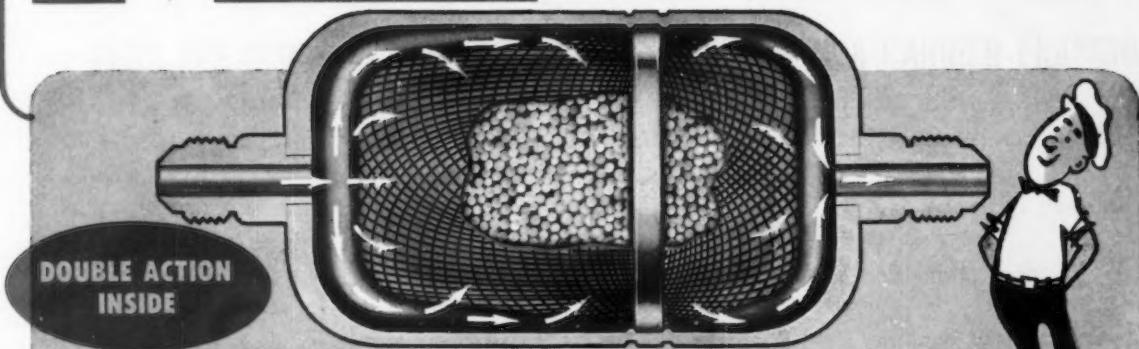
American Society of Heating,
Refrigerating and Air-Conditioning
Engineers Inc. (Semi-
Annual Meeting)
Chicago, Ill.

Feb. 13-16, 1961

15th International Heating &
Air-Conditioning Exposition
International Amphitheatre
Chicago, Ill.

M FILTER-DRIERS

Proven the Finest-INSIDE and OUTSIDE!



DOUBLE ACTION
INSIDE

Exclusive "MICROWALL" FILTER ENCLOSURE

filters out
contaminants
--keeps
desiccant clean



The "Microwall" Filter Enclosure forms a wall of protection around the desiccant on all sides—keeps contaminants out of desiccant chamber and out of system. The "Microwall" Filter is specially molded, reinforced with screens and provides low-micron filtration at both inlet and outlet.

POLISHED
ALL-BRASS
OUTSIDE

The "M" Filter-Drier is quality-built and looks it! Made of corrosion-resistant brass thruout. Newly proportioned seamless shell is spun in one piece, then highly polished and lacquered to a "jewel" finish. Has brass connections and brass seal caps. Also, new positive-identification labels.



The distinctive bright red and white box tells you at a glance it's the new "M" Filter-Drier—with part number and connections clearly marked—and detailed ratings and recommendations printed on the outside of every box.

DFN

Buy the new
M FILTER
DRIERS
at your wholesaler

circle 35 on reader service card

Write us for BULLETIN D-5

THE McINTIRE COMPANY
Livingston, New Jersey

Since 1925—specialists in Drying, Filtering, Straining

Carrier gives you what it takes to...

Corner the Market



NEW! "CORNER THE MARKET" CAMPAIGN!

Outstanding travel and merchandise awards for you and your salesmen . . . Hawaii . . . Jamaica . . . Regional parties . . . Mercedes-Benz Sedan . . . Ampex Stereo. Scores of luxurious prizes. All wrapped up in the most comprehensive incentive program ever offered to air conditioning dealers.

NEW! INDUSTRY'S MOST LIBERAL FINANCING!

Free floor plan. Stock now, pay as you sell! No down payment. No off-season interest or carrying charges. You get complete flexibility in financing to fit your needs and your local market.

NEW! ADVERTISING THROUGH THE WINTER!

First big off-season promotion featuring Carrier's exclusive "12-Month Home Air Conditioning."

PLUS THE OTHER KEY MONEY-MAKING FEATURES OF A CARRIER FRANCHISE:

- The famous Carrier brand—built by the acknowledged leader and founder of the industry.
- Broadest selection of equipment for every market and every air conditioning need—yours with Carrier.
- Complete emphasis on air conditioning—no dilution because of other interests.
- Solid support from the best established, most experienced distributor organization in the business. Carrier distributors, on the average, have sold the Carrier line for over 15 years.
- Strong national advertising backed by 25 years of continuous advertising effort. Every ad directs prospects to Carrier dealer listings in the Yellow Pages.
- Revolutionary advances pioneered by Carrier—including the new and sensational Carrier Automatic Air Purifier.
- Financing handled by a Carrier affiliate. Your customers get liberal terms and you gain their confidence.
- Sales training that is continuous and complete. Offers vital aid to you and your salesmen.
- On-the-spot help and training in modern engineering, service and business management techniques.
- Carrier Planned Service—a high-margin profit maker and volume builder in off seasons. You can keep your service and installation crews intact and fully staffed year round.



The sooner you get started on Carrier's
"CORNER THE MARKET" Campaign, the greater your
"share value" and the bigger your prizes.
Get in touch with your Carrier distributor right away!

Carrier

Air Conditioning Company

A DIVISION OF CARRIER CORPORATION • SYRACUSE 1, N.Y.

circle 11 on reader service card

THE REFRIGERATION & AIRCONDITIONING BUSINESS/NOVEMBER 1960

No need to "baby" this fiber glass duct liner!



J-M MICRO-BAR'S unique dual-density offers highest resistance to shop damage

Here's a fiber glass duct liner with two densities: a tough, heavy-density black surface... and a resilient, light-density backing. It is so flexible, and yet so tough, that you can easily fabricate it by ordinary, every-day methods. You will also find Micro-Bar so kind to hands that no gloves are needed to handle it.

You can form Micro-Bar right in

the brake with sheet metal. There's no danger of wasteful tearing or scuffing. More savings are possible through the elimination of costly metal nosings. An exclusive construction feature of Micro-Bar makes it easy to form erosion-resistant integral nosings or lapped seam joints.

This remarkable new duct liner has greater noise absorption and

thermal resistance. It has earned the lowest Underwriters' fire hazard rating for flexible, coated fiber glass duct liners.

For complete information on this rugged, money-saving new duct liner, call your J-M Representative. Or write to Johns-Manville, Box 14, New York 16, N. Y. In Canada: Port Credit, Ontario.



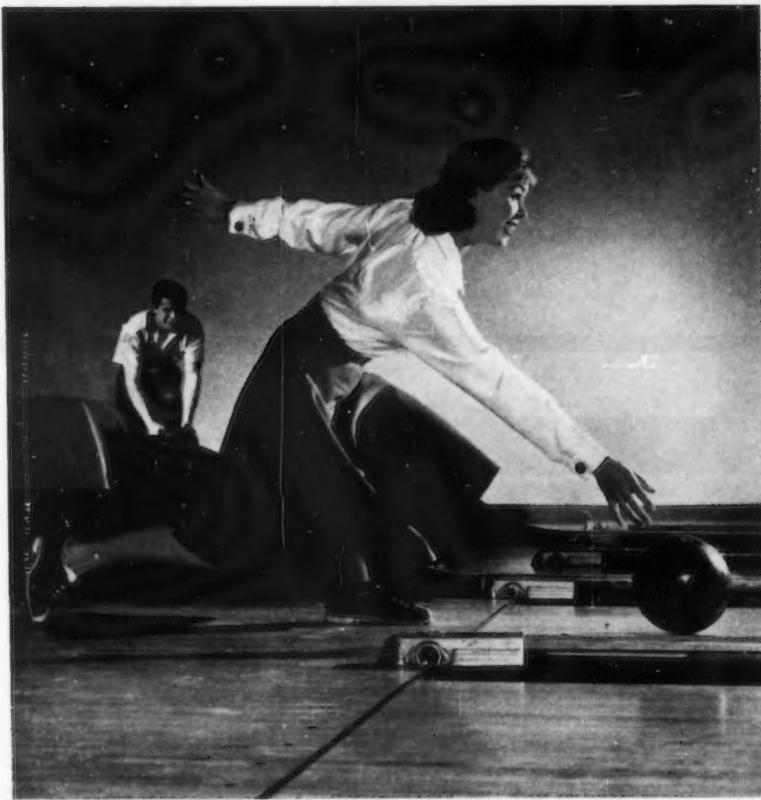
JOHNS-MANVILLE
FIBER GLASS

JOHNS-MANVILLE
JM
PRODUCTS

circle 22 on reader service card

NOVEMBER 1960/THE REFRIGERATION & AIRCONDITIONING BUSINESS

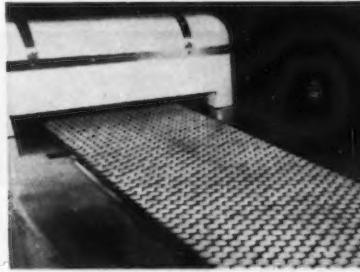
In bowling alleys and banks, bakeries and beauty parlors... You'll find



The popularity of bowling has increased so sharply in recent years that today more Americans actively participate in bowling than in any other indoor sport. Air-conditioned alleys have made it possible for bowlers to enjoy the game the year round.



Air-conditioning is a "must" inside bank vaults, museum and library storage rooms and other areas where, for security reasons, there are no windows or little air circulation. Precise control of temperature and humidity also protects important records against atmospheric variations.



Modern baking is a highly mechanized operation—far removed from grandma's oven. In this photo, crackers pour from the delivery end of an automated travelling oven. Air-conditioning is used in large commercial bakeries today to control temperature and humidity and for employee comfort.

genetron® SUPER-DRY REFRIGERANTS

*Approved! Accepted!
Preferred!*

In thousands of applications, you'll find "Genetron" refrigerants filling the air-conditioning and refrigeration needs of modern America. "Genetron" refrigerants offer unexcelled purity and dryness . . . and their strict quality specifications are consistently *bettered* in production. Leading equipment manufacturers, refrigeration engineers and air-conditioning and refrigeration wholesalers approve, specify and recommend them. They know they can always count on "Genetrons" for dependable, trouble-free service.

"Genetron" Super-Dry Refrigerants are available from wholesalers everywhere, coast to coast. See your wholesaler. Insist on "Genetron"!

**genetron 11 ORANGE LABEL CCl_3F
TRICHLOROMONOFLUOROMETHANE**

**genetron 12 WHITE LABEL CCl_2F_2
DICHLORODIFLUOROMETHANE**

**genetron 22 GREEN LABEL $CHClF_2$
MONOCHLORODIFLUOROMETHANE**

**genetron 113 PURPLE LABEL $C_2Cl_3F_3$
TRICHLOROTRIFLUOROETHANE**

**genetron 114 BLUE LABEL $C_2Cl_2F_4$
DICHLOROTETRAFLUOROETHANE**



It gets pretty hot under a hair dryer—even with air-conditioning. And the girls like to enjoy having their hair done. That's why so many beauty parlors are so well air-conditioned. It benefits customers . . . employees . . . and owners!

GENERAL CHEMICAL DIVISION

40 Rector Street, New York 6, N.Y.

circle 64 on reader service card

THE REFRIGERATION & AIRCONDITIONING BUSINESS/NOVEMBER 1960

**Allied
Chemical**

MUELLER BRASS CO. *Streamline®*
REFRIGERATION PRODUCTS . . . THE KEY
TO A CONSTANTLY CLEAN, DEPENDABLY
DRY AND THOROUGHLY EFFICIENT SYSTEM



DRYMASTER BALANCED FILTER-DRIER

Gives superb filtering and drying, protects against acid, moisture and sludge through use of "Hi-Fi" filter block desiccant, superfine monel screen filter tube and inlet distributor disc. Drymasters are available in 59 different sizes and styles with capacities from 2 tons through 165 tons . . . male and female flare or solder-type end connections.

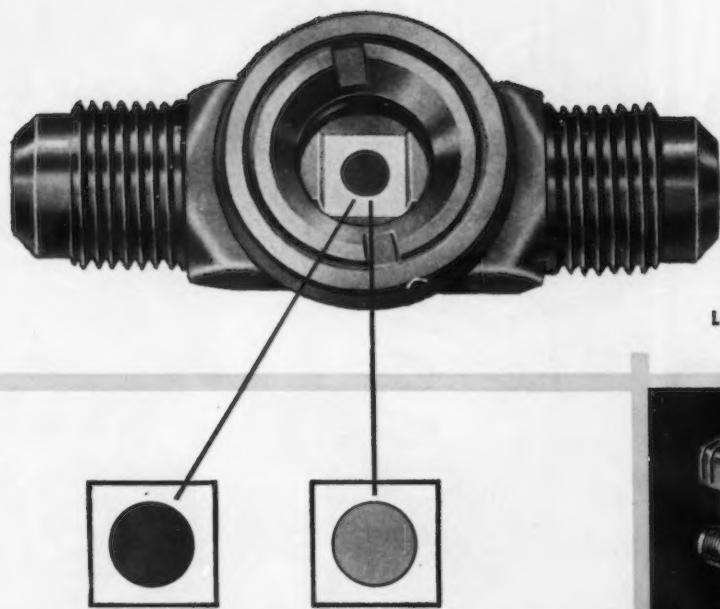


NEW REFILLABLE ANGLE-TYPE DRYMASTER
Gives added convenience—can be recharged in minutes.



MUELLER BRASS CO.
VAMPCO ALUMINUM PRODUCTS, LTD., STRATHROY, ONTARIO •

circle 38 on reader service card



Vuemaster®

LIQUID-MOISTURE INDICATOR

Round blue spot shows
the system is full and dry.

Round pink spot shows
that moisture is present.

Color spot indicator loses its shape when refrigerant level drops.

This dual-purpose indicator gives the same dependable, leak-proof performance that has made the Streamline single port liquid indicators famous for years but has the added advantage of being a combination moisture and liquid indicator all in one compact unit. A color spot indicator in the new Vuemaster makes possible an instant check of the refrigerant. When the color spot is round and blue, the system is sufficiently charged and the refrigerant is in a normal, dry condition. The spot changes to pink when excessive moisture is present and loses shape when refrigerant supply is low.

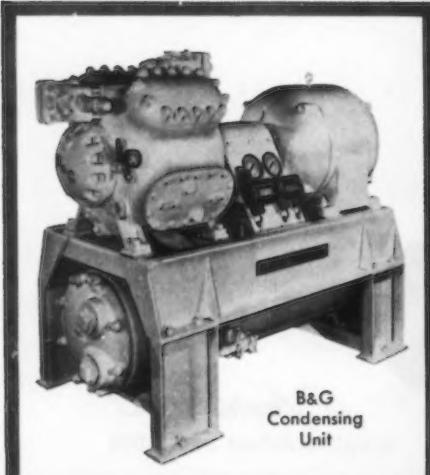
Combining engineering skill, experience and quality-controlled production, the Mueller Brass Co. manufactures a line of refrigeration and air-conditioning products that surpasses the most rigid code requirements. Their absolute dependability makes them first choice in any refrigeration or air-conditioning system. Always buy and install Mueller Brass Co. products . . . manufactured in the most complete range of styles and sizes in the industry. Get them at your wholesaler's today.



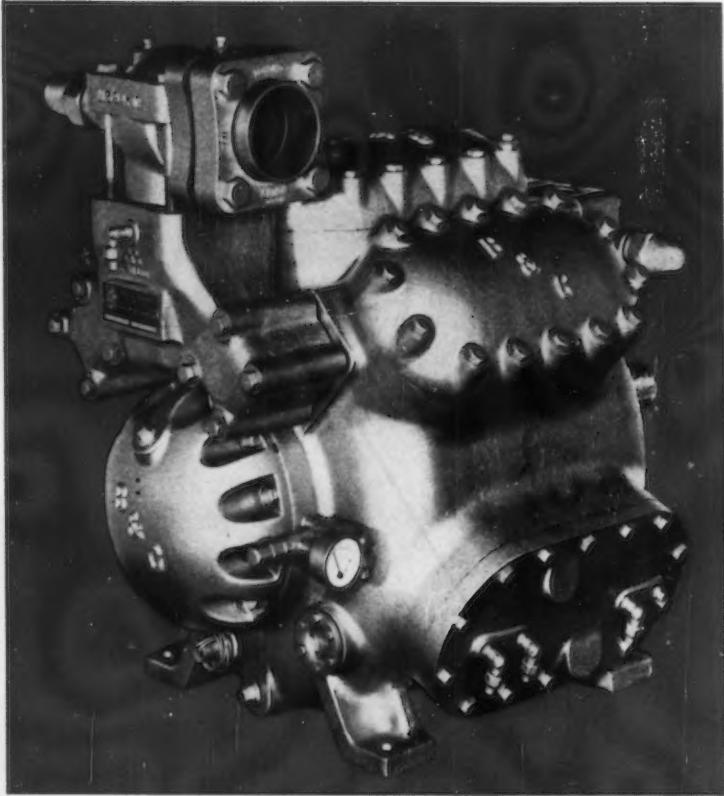
PORT HURON 14, MICHIGAN

Exclusive Canadian Representative for Mueller Brass Co. Air Conditioning and Refrigeration Products





All B&G Condensing Units and Package Liquid Coolers are equipped with B&G Compressors, shown here being assembled under controlled temperature and humidity conditions.



New Compressor better satisfies today's air conditioning requirements

An essential requirement of air conditioning equipment is *quiet* operation. In the newly developed B&G Compressor, this characteristic is an outstanding feature. The Compressor is completely new in conception, engineered and built to establish higher standards of performance.

The amazing reduction in vibration and noise is concrete evidence of quality! It indicates precision manufacture of a basically superior design. B&G Compressors have fewer parts, present fewer maintenance problems. All units have *one bore*—a few interchangeable parts will service them all. All these things add up to a sound warranty of exceptional performance and long life.

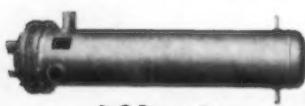


**BELL & GOSSETT
COMPANY**

Dept. GK-45 Morton Grove, Illinois

Canadian Licensee: S. A. Armstrong, Ltd., 1400 O'Connor Drive, Toronto 16, Ontario

A COMPLETE LINE OF REFRIGERATION AND AIR CONDITIONING "PACKAGES" AND COMPONENTS



B&G Evaporator



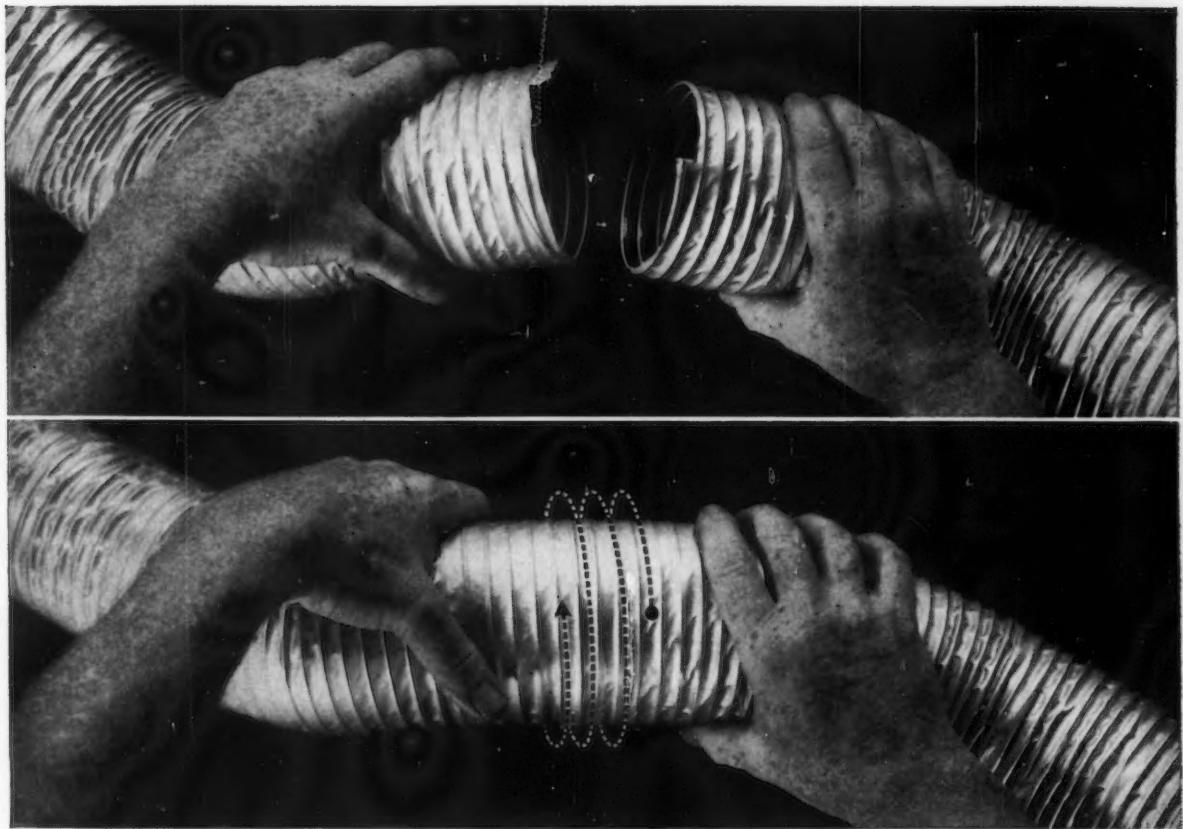
B&G
Centrifugal
Pump



B&G Condenser

circle 9 on reader service card

NOVEMBER 1960/THE REFRIGERATION & AIRCONDITIONING BUSINESS



1...2...3 turns and they're spliced

Thermaflex-ST® lengths connect easily to speed installation...reduce waste...save you money!

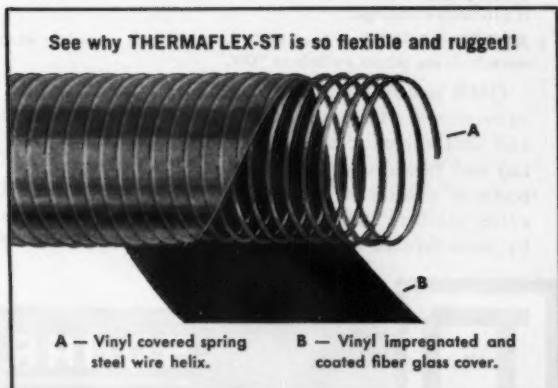
Thermaflex-ST is the highly flexible duct especially designed for run-outs in the air conditioning systems you install. Two lengths of lightweight Thermaflex-ST can be screwed together right on the job. 3 turns and you have an airtight connection. Advantages: faster installation, fewer throw-away pieces—and big savings for you!

Resists flame, moisture . . . cuts vibration, noise

Thermaflex is flame-resistant, moisture-resistant . . . reduces vibration and noise. It offers outstanding airflow efficiency, too. Unlike other nonrigid ducts, Thermaflex's cover and wire reinforcement are *permanently bonded*. Thermaflex materials are approved by Underwriters' Laboratories.

Flexible Tubing
CORPORATION
1211 New Whitfield St., Guilford, Connecticut

Thermaflex is a product of Flexible Tubing Corporation, leading manufacturer of nonmetallic duct. Write for name of the authorized Thermaflex representative nearest you.



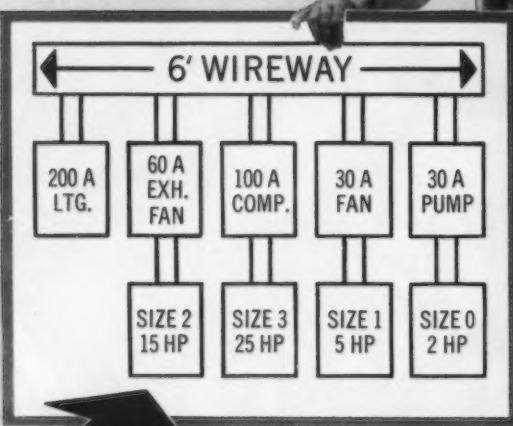
Three shipping points give you fast delivery on Thermaflex: GUILFORD, CONNECTICUT • ANAHEIM, CALIFORNIA • HILLSIDE, ILLINOIS

circle 16 on reader service card

THE REFRIGERATION & AIRCONDITIONING BUSINESS/NOVEMBER 1960

STARTERS IN QMB PANELBOARDS!

ANOTHER SQUARE D FIRST!



IT TAKES
41 HOURS AND 6 FEET
OF WALL SPACE TO INSTALL
AND WIRE SWITCHES
AND STARTERS LIKE THIS

IT TAKES
12 HOURS AND 30 INCHES
OF WALL SPACE FOR THE
SAME INSTALLATION WITH A
QMB STARTER PANELBOARD

QMB MEANS LESS TIME AND LESS SPACE PLUS

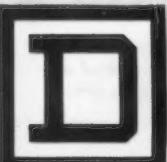
- **LOWER COST** • Time is money. The overall cost of QMB motor starters is usually less than that of separately installed starters and switches.
- **PLUG-IN FLEXIBILITY** • Plug-in switches and starters can be removed and installed in minutes. Minor circuit changes can be made without costly down time. Components easily rearranged if processes change.
- **ADDED SAFETY** • Interlocking prohibits opening starter or switch doors when switch is "ON."

QMB panelboards accommodate reversing and non-reversing starters, sizes 0 through 4. QMB switchboards and unit substations handle sizes 0 through 5. Part winding and two-speed starters available on order. All components available factory-assembled and wired. Enclosures, starters and plug-in switch units are also stocked by your Square D distributor for on-the-job assembly.



Notice how the PLUG-IN switch unit is mounted directly above the starter, permitting interlocking. The starter cannot be opened when the switch is in the "ON" position.

It's easy to order these starter and switch units. See your latest Square D Digest for further information.



SQUARE D COMPANY

wherever electricity is distributed and controlled

circle 48 on reader service card

NOVEMBER 1960/THE REFRIGERATION & AIRCONDITIONING BUSINESS

LET'S TALK

Business

Let's get the profit back in plan-and-spec jobs

THE "or equal" or "approved equal" or "as approved" clause in the majority of plan-and-spec work is often used by the prime contractor as a hunting license, with the installing contractor being considered as the fair game.

The original intent of the "equal" clause was to give contractors handling competitive equipment of comparable quality and performance an equal opportunity to bid for and secure a specific job. This procedure was also supposed to protect the owner by maintaining the desired standards on his job at the lowest possible price which would include a fair profit for the installing contractor.

The theory is fine. Why, then, does the procedure break down so often in actual practice?

Most work bid by the airconditioning and refrigeration installing contractor is on a sub-contract basis. This makes him a perfect target for renegotiation after the general contract is let.

How many times, after bidding a job where you are specified on the plans, have you been told your price is high by comparison with a competitor bidding under the equal clause? How many times have you gone to your supplier, and he in turn to the manufacturer, requesting that prices be shaved or additional discounts given? And how many times have you taken a second and third look at your bid, then shaved your estimate on labor and overhead?

Yes, how many times have you followed this familiar pattern, with the total result being little or no profit on the job?

Under the equal clause the installing contractor is the principal determining factor in the decision of whose equipment or product actually is purchased and installed. His bond as well as his reputation assures responsibility and operation of the entire job he installs.

We believe the installing contractor has every right to expect a reasonable return on his investment of time, material and capital. The fact is, however, that profits are very difficult to retain in plan-and-spec work because of this bid-shopping practice.

Now that we have defined the problem, let's solve it!

What would be fair for all parties concerned?

We suggest that the bid from each sub-contractor—airconditioning, refrigeration, insulation, air handling, and piping—be included as a separate part of the prime contractor's total bid, to be accepted as submitted at the costs shown. Then, when a prime contractor is successful on a bid, the installing contractor of our industry products would be known immediately and the price would be firm. Shopping would be eliminated and a fair profit would again be realized.

Jack Robinson



2 points of view on OFF-SEASON

"Off-season
selling
makes
dollars
and
sense."

says
George Webster,
consulting editor,
business management

THERE'S A TREMENDOUS OFF-SEASON MARKET for airconditioning. And this market is rapidly growing in importance.

Best evidence of this fact:

(1) The industry's experience during this past merchandising year when heavy orders during the winter months helped offset sagging sales during the normal peak season.

(2) The earlier introduction of products by manufacturers, many of whom already have shown their 1961 lines to distributors and dealers, and the increasing use of incentive programs to get these distributors and dealers to buy and stock airconditioning equipment now.

Quite naturally, the seasonal influence makes itself felt more strongly in the residential field than in industrial or commercial, because in residential sales the basic consideration is personal comfort, not dollars and cents.

Residential airconditioning buyers can be broken down into two basic groups.

First, there are those who have definitely decided by the end of a particular cooling season that they are going to have airconditioning next year.

Second, there are those who have in the back of their minds the idea of buying airconditioning, but will procrastinate until they have suffered several nights of discomfort after summer weather comes.

The off-season buyer may account for a large portion of your year's sales. This proportion will be in direct relation to how hot it was the previous season (which increases the number of off-season buyers), and how hot it gets during the coming season (which increases the number of in-season buyers).

The off-season buyer is looking for two things: a better price, and a better installation than he can get when crews are busy during the rush season. If you can assure him he'll get these two things from you, you will be well on your way to closing the deal.

You can promote off-season sales in a number of ways. You can use newspaper or radio advertising, direct mail, telephone canvass, or door-to-door selling. Regardless of what methods you use, be

Continued on page 38

SELLING

"**THERE'S NO SUCH THING** as off-season selling. If you want to sell successfully, you must eliminate those two words from your vocabulary," says Tom Barrett, president of Barrett Refrigeration Co., Boston, Mass.

"Selling is a full-time deal. Concentrate on it 52 weeks a year. Don't even mention anything to your salesmen about off-season selling."

That's Barrett's philosophy of year-round selling. He drives as hard to sell airconditioning in January as he does in July. "I guarantee my men a full year's work. One third of my men do nothing but installation work," he says. "I try to sell depending on the amount of work I need to keep my men busy, not according to the calendar."

Barrett started in the airconditioning and refrigeration business as a serviceman. After selling part-time, he moved into it on a full-time basis. He feels he knows the contractor-dealer business at all levels. "Even now I sometimes carry my tool kit with me when making a sales call," he remarked. Barrett, who handles Typhoon equipment, has only one salesman—himself.

This Boston dealer has definite ideas about what he, as a year-round salesman, should be and what he should do. "First," he says, "I sell myself as qualified to sell the job I'm after. Second, I go after every job with enthusiasm." This enthusiasm, Barrett feels, is passed on to the customer. "Third, I work hard at selling. Too many salesmen work hard at working."

What does he mean by this? "I mean spending long hours making intricate drawings and drawing up fancy proposals before the contract is signed," he said. "Salesmen often waste valuable time making numerous repeat calls on the same customer. This time could be used to contact other prospects."

Barrett describes his work this way:

"First of all, I don't believe I have a set way of selling. My first step, though, is going through what I call the tentative selling stage. During this time, I always try to avoid presenting fine-line drawings to the customer. However, I still provide enough information to help him make a decision."

"I feel capable, by knowing my product and having confidence in it, to give the prospect just a rough drawing. Then I am prepared to answer any

Continued on page 59

**"Don't
mention
off-season
selling
to
me!"**

. . . says

Tom Barrett

airconditioning dealer

Boston, Mass.

OFF-SEASON SELLING (Webster)

sure to stress the two things all your off-season prospects want—a dollar-and-cents saving, and a better-than-average installation job.

Don't start your advertising before January, unless you plan on promoting airconditioning as a "Christmas gift for the family" idea. Otherwise, November and December advertising generally gets too much competition from Santa Claus to be effective. Ads breaking immediately after New Year's Day, however, have been found to bring in leads.

Whatever advertising you do should be consistent. Hold to the same theme, and plan your program so that you reach the same audience over and over again.

Be direct in your advertising message. If you use newspaper space, for instance, try a headline that says simply: "Save Money and Get a Better Installation". Explain frankly that your installation crews are not busy and that you want some work to justify keeping them on the payroll. This will provide a valid and believable explanation for both the cash saving and the top-grade installation that you offer.

You'll get better results by running a series of small ads on a consistent schedule than by sinking all of your budget in one or two big splashes.

If you use direct mail, stress the same things you do in your newspaper advertising, but in addition use a return card offering a thermometer or some other inexpensive give-away as an inducement for allowing one of your salesmen to make a survey.

Always personalize your direct mail by addressing it with the individual's name, never just the address and the word "Occupant".

Aim Your Direct Mail at Qualified Prospects

Direct mail can be particularly effective with two types of potential customers: those living in a general area that you know is going to swing to airconditioning, and those living in the immediate neighborhood of your present customers.

Be sure to keep an accurate record of prospects to whom you have sent direct mail, so that your salesmen can follow up with telephone calls reminding them of the give-away offer and warning that your work schedules are rapidly filling up so that you won't be able to offer the special price inducement much longer.

Another excellent way to stimulate off-season business is to hire telephone canvassers on a temporary basis, and let them operate from their own homes. In setting up such a plan, assign a phone canvasser to each one of your salesmen, then have the salesman provide the canvasser with the names and phone numbers of the prospects to call.

Give the canvasser a canned pitch, such as the

salesman would use if he were doing his own phone canvassing. It should run something like this:

"Hello. I am Mrs. Brown, calling from the ABC Airconditioning Company. We are making a survey of airconditioning in your neighborhood, Mrs. Smith. Do you have airconditioning in your home?"

If the prospect answers yes, the canvasser should then ask her who did the job and what brand of equipment was purchased. This will give you an idea of what your competitors are doing.

If the prospect answers no to the first question, then the canvasser should continue, saying something like this: "We are now offering unusual savings on airconditioning, and our sales engineer has a very attractive indoor-outdoor thermometer which we would like to give you with no obligation. Would it be convenient for him to bring it to you tomorrow night?"

If the prospect says she'll be busy that night, then the canvasser should try to set up the appointment for some other night, until she either secures the lead or is turned down flatly.

In this day when most salesmen prefer to sit around the office and wait for the phone to ring, it's mighty tough to sell them on the idea of door-to-door canvassing. But it can be done, if you have a sensible plan—and don't overwork it.

Hangers Pave Way for Door-to-Door Selling

One easy way is to give the salesman 100 door hangers each day and require him to hang them on the doors of 100 prospects. These hangers should echo the same message contained in your newspaper advertising or your direct mail pieces.

For instance, the heading should read, in big bold letters, something like this: "FREE—Indoor-Outdoor Thermometer", or whatever else you may be giving away. Your phone number also should be prominent, and a place should be provided in which the salesman can write his name. Copy should tell the prospect the advantages of buying airconditioning in the off-season.

Allow two or three days for the prospect to respond to the door hanger pitch, then follow up by phone if you haven't heard anything.

If you can find salesmen who are rugged enough, or willing enough, send them out knocking on doors in certain carefully selected areas. On each call the salesman should carry a prettily wrapped gift (the same give-away that you are offering through other media).

He should start his conversation by saying: "Good morning, Mrs. Smith. I am from the ABC Airconditioning Company. I have a gift for you, if you will allow me to explain a new and unusual way you can obtain airconditioning for your home."

If he gets his foot in the door he should set the gift on the mantle or on a table, without unwrapping it or telling the prospect what it is. This will whet the prospect's curiosity while the salesman is getting across his story. Then he should give the

gift to the prospect while he proceeds to make his survey.

The important thing to remember in any off-season activity is that you have to keep promoting. Even the big giants in retailing will admit that what works in one area won't work in another, and what worked last week won't work this week. But they still keep telling their story, one way or another. And there are hundreds of successful air-conditioning contractor-dealers across the country who will tell you that this same type of continuous promoting is the secret of their sales success, too.

Can Off-Season Selling Pay Its Own Way?

So far all we've talked about is how to promote off-season sales of airconditioning. Now comes the key question: How can you justify this off-season promotional activity in terms of the economics of your business?

First of all, you can justify much of your off-season promotional expense by the fact that you are favorably impressing many prospects who may not buy off-season but will remember your company when the weather gets hot. This means you will stand a good chance of getting a larger share of in-season business, so actually your off-season promotional expenditures can lead to a reduction of in-season promotional costs. (See the schedule of planned advertising presented below.)

Remember, this favorable influence you have created will not only work for you in the immediate season ahead but also for many years to come. You will build your company's name and business by constantly telling your prospects that you are ready, willing and able to serve their airconditioning needs. Promotional expense year after year builds a backlog of potential customers who are worth an immeasurable amount in dollars and cents, even though they are not reflected as an asset of your company.

Another advantage of off-season promotion is

that it keeps your salesmen busy and motivated, because they have something to do and a definite plan to follow.

Also, this type of activity tends to level out the work for your installation mechanics, and thus stabilize their income.

OK, so you've convinced yourself that off-season promotional activity is a good idea. Now, how can you decide how much to spend on it, and how can you satisfy yourself that this expenditure will be worthwhile?

Here's a rule of thumb: the amount you spend for advertising in any off-season month should not exceed the gross profit from sales of that month, after deducting sales commissions.

For example, say you do \$10,000 of "extra" off-season business, and because you offer this equipment at a lower price your gross profit is 20% or \$2000, out of which you pay out \$500 in sales commissions. The \$1500 profit remaining is the maximum you should allow for advertising.

How can you justify spending your entire gross profit on this \$10,000 worth of business for advertising? Look at it this way: if you had done no off-season advertising at all you would have had no "extra" off-season business, so you would not have had this \$1500 with which to pay for the advertising.

This is known as the marginal theory of advertising expense. Simply stated, it says that it is economically feasible to spend as much for advertising as you get in increased gross profit from the sales, after deducting all direct sales costs.

Budget Your Advertising for the Entire Year

You should plan your advertising budget for the full selling season, however, and not just for the off-season months alone. In this way you can vary your month-to-month expenditures to best advantage.

For example, if you allow an over-all budget of 4% against expected sales of \$100,000, you will have a total budget of \$4000. The accompanying schedule of planned advertising based on these figures shows that an expenditure of \$500 in January against \$5000 in sales will give you an advertising cost of 10%. As this schedule indicates, your advertising cost may vary from this high of 10% of sales to a low of 2% in August, but will average out to your budgeted 4% for the year.

Naturally you must work out your own budget to fit your particular company. But it is an established principle that heavy off-season expenditures for the advertising and promotion of airconditioning are economically justified when considered in the light of your over-all advertising budget, and in the operational advantage of keeping your salesmen and mechanics busy during the normally slow months.

And remember this—the customer who buys from you in the off-season can't become your competitor's customer when the season rolls around.

ABC Airconditioning Company

Schedule of Planned Advertising

	Sales Volume	Advertising Expenditure	Percentage of Sales
January	\$ 5,000	\$500	10%
February	10,000	600	6
March	10,000	600	6
April	10,000	500	5
May	15,000	600	4
June	20,000	600	3
July	20,000	400	2
August	10,000	200	2
	\$100,000	\$4,000	4%

The Product



STORAGE TANK pre-chills product from room temperature to zero F.

Aerosol Packaging Needs Dual Cooling

The Propellant

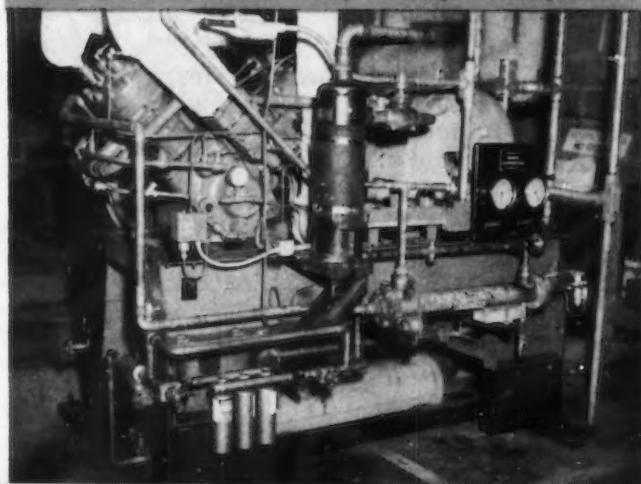
PUTTING SHIPS IN BOTTLES isn't any tougher than packaging cosmetics in aerosol containers. Especially since both the product and propellant must be pre-chilled.

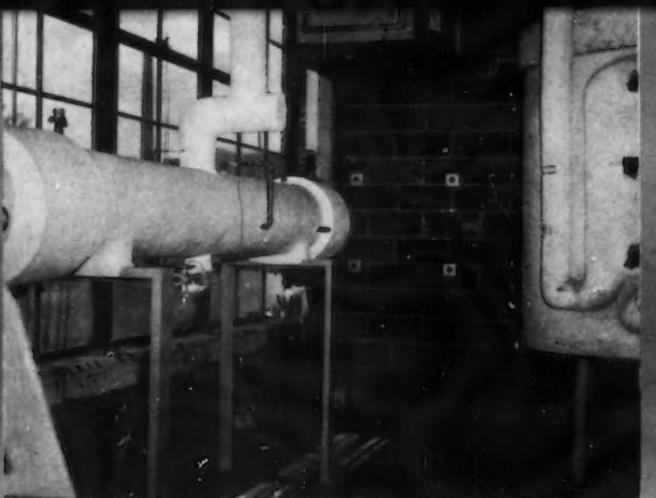
If either is too warm as the product passes under the filler bowl to accept the propellant, it boils off too rapidly and pressure will be too low to force the product out of the can.

Frank Helmstetter, Monsen Refrigeration Service, Bloomfield, N.J., worked with officials of an eastern packaging company to devise a refrigeration system which would keep such products as hair sprays chilled until sealed in the spray containers.

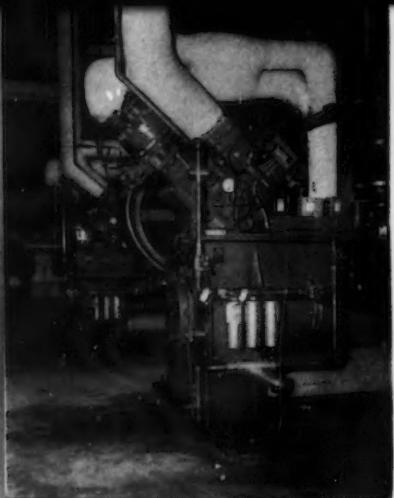
To pre-cool the product while it was still in the storage tank, Monsen bent copper tubing around the tank. A direct expansion 30-hp compressor forces R-22 through the tubing. The com-

PROPELLANT CHILLERS are cooled by four 2-stage condensing units.





CONTINUOUS CHILLER drops temperature of product to -15 F.



PRODUCT is pumped through condensing unit.

pressor is located in a small equipment room, completely separate from the packaging area, since volatile liquids are mixed in the same room as the storage tanks. Slug eliminators keep slugs from coming back to the compressor by boiling off the vapor prior to returning to the machine.

As the product is pre-chilled from room temperature to zero degrees, it is pumped through a stainless steel continuous chiller. The product leaves the chiller at -15 F, then passes through stainless steel tubing to the filler bowl where it is ejected into the aerosol container.

The piping system from the chiller to the filler head is a loop system so that if the line is shut down at any time the product returns to the chiller and is kept under refrigeration.

Temperature of the product is kept low at the filler bowl by a

coil wrapped around the bowl. This takes care of the dead-end of the loop piping system. Cooling for the filler bowl is done with $\frac{1}{2}$ -hp units mounted on wall brackets in the filling room.

Two outside tanks are used to store the propellant, which is simply a mixture of common refrigerants. Propellant is pumped to inside tanks after vapor pressure has been reduced on the interior storage tanks.

As propellant is pumped to the inside tanks it activates a 5-hp compressor in the equipment room. This draws vapor off the inside tanks and pumps it to the outside tanks. This procedure reduces pressure on the inside tanks so the pump can transfer liquid. During the heating season when outdoor temperatures are at or close to zero the vapor pressure would keep the pump from forcing liquid into the inside tanks unless an

extremely large pump was used. An oil separator prevents pumping oil to the outside tanks.

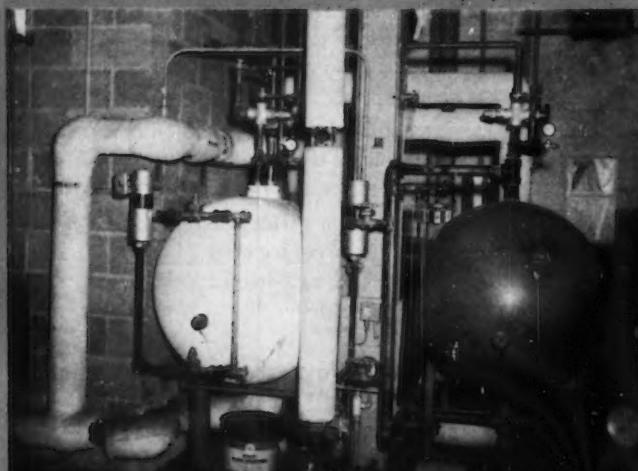
The propellant is then pumped through a stainless steel chiller and piping system similar to the one used for the product.

At a temperature of -40 F. the propellant is pumped into the filler bowls where it is drawn off into individual cans which contain a -10 F solution of cosmetic concentrate.

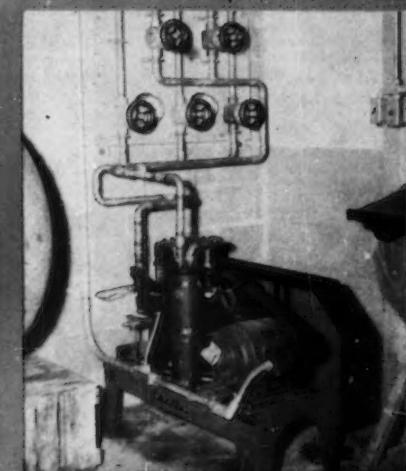
Before propellant enters the filler bowl to be ejected into a container, it is taken through a drier equipped with a moisture indicator and manifold so cartridges can be removed when permeated with moisture.

Chillers are cooled by four 2-stage compressors located in the equipment room. Chillers measure about 12' long, and can each handle an estimated 2200 lb. of product or propellant every hour.

PROPELLANT IS STORED in these inside tanks after vapor pressure is reduced.

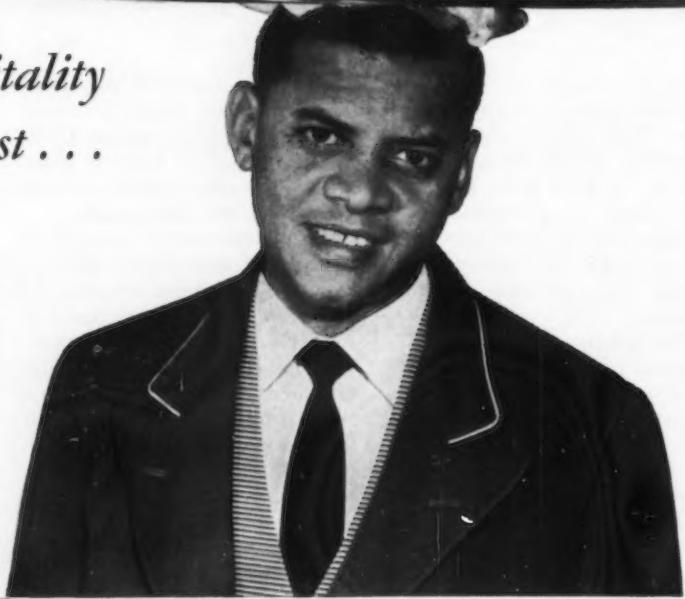


CONDENSER draws vapor off inside tanks.





*Homestead hospitality
is the finest . . .*



Shell-Ice helps make it so

• The Homestead, world-famous resort hotel at Hot Springs, Virginia, noted for its fine facilities, has added a Frick Shell-Ice maker, further providing its guests with the finest of cooled beverages and foods.

Shell-Ice is superior for several reasons . . . it is curved, combining a large surface with great cooling power and durability. Shell-Ice is clear, hard and solid . . . has no snow, slush, thin flakes or waste.

Frozen on stainless-steel tubes by direct expansion of ammonia or other refrigerant, Shell-Ice is made with a controlled variable thickness of $\frac{1}{8}$ inch to $\frac{1}{2}$ inch, and is harvested automatically.

The Shell-Ice makers are built in a wide selection of sizes, with nominal capacities up to 40 tons of ice every 24 hours. A free Bulletin (No. 54) describing Shell-Ice makers may be had on request. Write to

FRICK COMPANY • Waynesboro, Pennsylvania

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NOVEMBER 1960/THE REFRIGERATION & AIR CONDITIONING BUSINESS

First six-month 1960 ARI figures show 15% gain over '59 unitary shipments

A 15% GAIN IN MANUFACTURERS' SHIPMENTS of unitary airconditioners has been reported for the first half of 1960 over last year. Shipments, as reported to Air-Conditioning and Refrigeration Institute, totaled 185,474, excluding coils.

Heat pumps head the list. The 13,261 self-contained unitary heat pumps shipped from January

through June represent a 35% hike over 1959. More than 67% of all heat pumps shipped were self-contained.

ARI spokesmen view these figures, which do not include room airconditioners, as indicative of a healthy trend. First-quarter figures showed only a 10% increase over a year ago.

Condensed summary of unitary airconditioner shipments (April-June 1960)

SIZE	By Condenser-Type		Total Units	Percent of Change from 1959
	Air or Evaporatively Cooled	Water-Cooled		
Under 27,000 Btu/hr	20,550	-52	20,498	+22%
27,000-32,999 Btu/hr	9,437	7	9,444	+28%
33,000-41,999 Btu/hr	37,077	2,228	39,305	+7%
42,000-53,999 Btu/hr	16,078	1,618	17,696	+81%
54,000-64,999 Btu/hr	13,484	5,060	18,544	+5%
65,000-96,999 Btu/hr	5,702	2,740	8,442	+12%
97,000-134,999 Btu/hr	2,525	1,882	4,407	+1%
135,000-184,999 Btu/hr	884	1,029	1,913	+28%
185,000-249,999 Btu/hr	404	758	1,162	+45%
250,000-319,999 Btu/hr	63	452	515	-5%
320,000-379,999 Btu/hr	70	280	350	-3%
380,000 Btu/hr and over	66	276	342	+317%
TOTAL	106,340	16,278	# 122,618	+18%

Condensed summary of unitary airconditioner shipments (Jan.-June 1960)

SIZE	By Condenser-Type		Total Units	Percent of Change from 1959
	Air or Evaporatively Cooled	Water-Cooled		
Under 27,000 Btu/hr	28,808	133	28,941	+14%
27,000-32,999 Btu/hr	14,029	30	14,059	+13%
33,000-41,999 Btu/hr	55,634	4,084	59,718	+6%
42,000-53,999 Btu/hr	22,716	3,257	25,973	+68%
54,000-64,999 Btu/hr	20,941	8,724	29,665	+11%
65,000-96,999 Btu/hr	9,103	4,403	13,506	+12%
97,000-134,999 Btu/hr	3,683	3,187	6,870	-3%
135,000-184,999 Btu/hr	1,271	1,662	2,933	+10%
185,000-249,999 Btu/hr	633	1,191	1,824	+41%
250,000-319,999 Btu/hr	112	790	902	-2%
320,000-379,999 Btu/hr	135	527	662	+23%
380,000 Btu/hr and over	71	350	421	+216%
TOTAL	157,136	28,336	# 185,474	+15%

—Does not include shipments of refrigeration chassis

Unitary Airconditioner Shipments by Manufacturers

January - June 1960

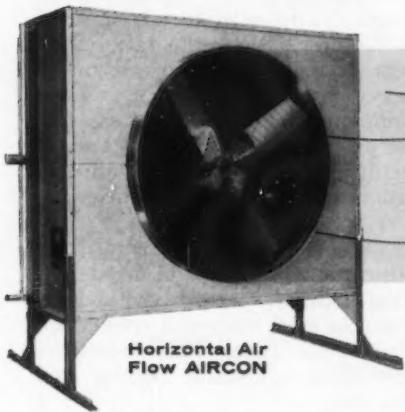
Reported by Unitary Air-Conditioner Section, Air-Conditioning and Refrigeration Institute

(Condensed summary by size appears on preceding page)

DESCRIPTION OF PRODUCT		LINE NO.		TOTAL SHIPMENTS (NUMBER)		TOTAL		% Change from 1959	
		(By Conditioner Type)		Number Air or Environ- mentally Cooled BA		Under 27,000 Bu/hr		Under 27,000 Bu/hr	
No. of Cos. - 1960-8		Under 27,000 Bu/hr		590		-		-	
1959-8		27,000-32,999 Bu/hr		591		-		-	
SELF-CONTAINED		33,000-41,999 Bu/hr		592		6,223		+2%	
AND REMOTE-CONDENSER		42,000-53,999 Bu/hr		593		-		-	
CONDENSER TYPE		43,000-64,999 Bu/hr		594		-		-	
(5)		65,000-96,999 Bu/hr		595		-		-	
TOTAL		97,000 Bu/hr and over		596		-		-	
No. of Cos. - 1960-23		Under 27,000 Bu/hr		690		6,916		+2%	
1959-16		27,000-32,999 Bu/hr		691		946		+13%	
SELF-CONTAINED		33,000-41,999 Bu/hr		692		5,800		+45%	
(5)		42,000-53,999 Bu/hr		693		866		+20%	
TOTAL		54,000-64,999 Bu/hr		694		730		+8%	
No. of Cos. - 1960-23		Under 27,000 Bu/hr		695		-		-	
1959-16		27,000-32,999 Bu/hr		696		4,919		+	
SELF-CONTAINED		33,000-41,999 Bu/hr		697		5,800		+20%	
(5)		42,000-53,999 Bu/hr		698		866		+20%	
TOTAL		54,000-64,999 Bu/hr		699		730		+8%	
No. of Cos. - 1960-23		Under 27,000 Bu/hr		700		-		-	
1959-16		27,000-32,999 Bu/hr		701		-		-	
SELF-CONTAINED		33,000-41,999 Bu/hr		702		-		-	
(5)		42,000-53,999 Bu/hr		703		-		-	
TOTAL		54,000-64,999 Bu/hr		704		-		-	
No. of Cos. - 1960-23		Under 27,000 Bu/hr		705		-		-	
1959-16		27,000-32,999 Bu/hr		706		-		-	
SELF-CONTAINED		33,000-41,999 Bu/hr		707		-		-	
(5)		42,000-53,999 Bu/hr		708		-		-	
TOTAL		54,000-64,999 Bu/hr		709		-		-	
No. of Cos. - 1960-23		Under 27,000 Bu/hr		710		-		-	
1959-16		27,000-32,999 Bu/hr		711		-		-	
SELF-CONTAINED		33,000-41,999 Bu/hr		712		1,469		+27%	
(5)		42,000-53,999 Bu/hr		713		3,827		+50%	
TOTAL		54,000-64,999 Bu/hr		714		765		+95%	
No. of Cos. - 1960-23		Under 27,000 Bu/hr and over		715		82		+55%	
1959-16		27,000-32,999 Bu/hr		716		5,584		+9%	
SELF-CONTAINED		33,000-41,999 Bu/hr		717		-		-	
(5)		42,000-53,999 Bu/hr		718		12,180		+25%	
TOTAL		54,000-64,999 Bu/hr		719		10,927		+18%	
No. of Cos. - 1960-23		Under 27,000 Bu/hr		720		5,902		+48%	
1959-16		27,000-32,999 Bu/hr		721		17,236		+48%	
SELF-CONTAINED		33,000-41,999 Bu/hr		722		4,422		+11%	
(5)		42,000-53,999 Bu/hr		723		17,009		+20%	
TOTAL		54,000-64,999 Bu/hr		724		12,450		+11%	
No. of Cos. - 1960-23		Under 27,000 Bu/hr		725		5,902		+20%	
1959-16		27,000-32,999 Bu/hr		726		18,962		+48%	
SELF-CONTAINED		33,000-41,999 Bu/hr		727		4,628		+11%	
(5)		42,000-53,999 Bu/hr		728		17,750		+20%	
TOTAL		54,000-64,999 Bu/hr		729		17,750		+20%	
No. of Cos. - 1960-23		Under 27,000 Bu/hr		730		5,902		+20%	
1959-16		27,000-32,999 Bu/hr		731		18,962		+48%	
SELF-CONTAINED		33,000-41,999 Bu/hr		732		4,628		+11%	
(5)		42,000-53,999 Bu/hr		733		17,750		+20%	
TOTAL		54,000-64,999 Bu/hr		734		17,750		+20%	
No. of Cos. - 1960-23		Under 27,000 Bu/hr		735		5,902		+20%	
1959-16		27,000-32,999 Bu/hr		736		18,962		+48%	
SELF-CONTAINED		33,000-41,999 Bu/hr		737		4,628		+11%	
(5)		42,000-53,999 Bu/hr		738		17,750		+20%	
TOTAL		54,000-64,999 Bu/hr		739		17,750		+20%	
No. of Cos. - 1960-23		Under 27,000 Bu/hr		740		5,902		+20%	
1959-16		27,000-32,999 Bu/hr		741		18,962		+48%	
SELF-CONTAINED		33,000-41,999 Bu/hr		742		4,628		+11%	
(5)		42,000-53,999 Bu/hr		743		17,750		+20%	
TOTAL		54,000-64,999 Bu/hr		744		17,750		+20%	
No. of Cos. - 1960-23		Under 27,000 Bu/hr		745		5,902		+20%	
1959-16		27,000-32,999 Bu/hr		746		18,962		+48%	
SELF-CONTAINED		33,000-41,999 Bu/hr		747		4,628		+11%	
(5)		42,000-53,999 Bu/hr		748		17,750		+20%	
TOTAL		54,000-64,999 Bu/hr		749		17,750		+20%	
No. of Cos. - 1960-23		Under 27,000 Bu/hr		750		5,902		+20%	
1959-16		27,000-32,999 Bu/hr		751		18,962		+48%	
SELF-CONTAINED		33,000-41,999 Bu/hr		752		4,628		+11%	
(5)		42,000-53,999 Bu/hr		753		17,750		+20%	
TOTAL		54,000-64,999 Bu/hr		754		17,750		+20%	
No. of Cos. - 1960-23		Under 27,000 Bu/hr		755		5,902		+20%	
1959-16		27,000-32,999 Bu/hr		756		18,962		+48%	
SELF-CONTAINED		33,000-41,999 Bu/hr		757		4,628		+11%	
(5)		42,000-53,999 Bu/hr		758					

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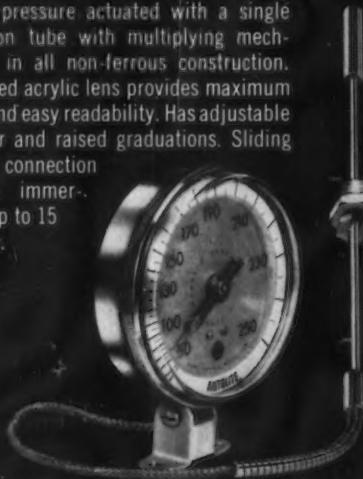
THE REFRIGERATION & AIRCONDITIONING BUSINESS/NOVEMBER 1960



THE NEW MODEL S solid filled thermometer offers 270 angular degrees of evenly calibrated arc in all non-ferrous metal construction. Adjustable pointer, crowned acrylic lens provides maximum light and easy readability. Raised graduations. Sliding union connection allows up to 15-inch immersion.



THE NEW MODEL Y thermometer is vapor pressure actuated with a single Bourdon tube with multiplying mechanism in all non-ferrous construction. Crowned acrylic lens provides maximum light and easy readability. Has adjustable pointer and raised graduations. Sliding union connection allows immersion up to 15 inches.



IMPORTANT ADVANCED FEATURES

- Raised graduations to reduce parallax error
- Adjustable bracket allows mounting variations of 150 degrees on horizontal axis
- Case rotates 90 degrees in either direction on vertical axis
- Crowned acrylic lens for maximum light on dial
- Adjustable pointer
- Sliding union connection nut allows 3 to 15 inches immersion. May be removed if not required

THE NEW MODEL B bi-metal thermometer is presented in a chrome-plated drawn brass case. Crowned acrylic lens provides maximum light and easy readability. Has adjustable pointer and dial and raised graduations. 304 stainless steel connection and stem.

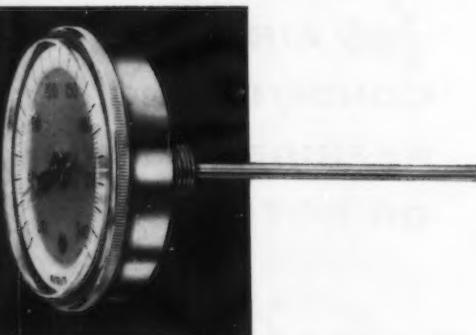
Announcing... new **AUTOLITE®** DIAL INDICATING THERMOMETERS

Autolite thermometers are available in two time-tested Bourdon tube capillary thermal systems. Model S is solid liquid filled, and provides 270 angular degrees of evenly graduated arc. No delicate geared segments, pinions, hairsprings. Pointer action on a ratio of 1:1 with Bourdon system. Exceptionally rugged movement withstands heavy vibration and shock. Long life and accurate temperature indication is assured.

Model Y is vapor pressure actuated. Uses a single Bourdon tube and multiplying mechanism in all non-ferrous metal construction. Suitable for a variety of installations.

Autolite also has its new Model B bi-metal thermometer incorporating many features of Models S and Y, but employing a thermostatic bi-metal helix sensing element. Stainless steel stem and connection nut. Waterproof, non-ferrous case. Easy-to-remove crowned acrylic lens. Has adjustable pointer and raised graduations on dial.

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NOVEMBER 1960 / THE REFRIGERATION & AIR CONDITIONING BUSINESS

APPLICATIONS Manual

by Arthur H. Farr, consulting editor, airconditioning

THE HEAT PUMP PRIMER — PART 11

CONSERVATION OF HEAT in dwellings and commercial structures has long been a topic of great interest among design engineers.

The introduction and subsequent widespread use of electric radiant heat and the electric heat pump has served as a catalyst in transforming theoretical interest into practical methods of conservation.

Consider, for example, a small retail food store located in Tulsa, Okla., operating on a water-source heat pump. The job factors are itemized in Table 1.

The capacity of a 5-hp water-source heat pump on the heating cycle with a 70 F air enter-

ing the heat pump and 60 F well water is 51,200 Btuh and the kw input is 3.82 (Table 2).

With no attempt made towards heat conservation, the annual input to the heat pump during the heating season can be estimated by use of the degree-day method.

First, however, it is necessary to calculate the supplemental heating requirement, as follows:

$$\begin{array}{l} \text{Structure heat loss} & 53,800 \text{ Btuh} \\ \text{Heat pump capacity} & \\ \quad (60 \text{ F water}) & -51,200 \text{ Btuh} \\ \text{Supplemental heat required} & 2,600 \text{ Btuh} \\ \frac{2600 \text{ Btuh}}{3413 \text{ Btu/kw}} = .76 \text{ kw} \end{array}$$

Let's assume that a 1-kw electric supplemental heat package

is available for the unit in our problem. The heat pump operating without supplemental heat will supply

$$\frac{51,200 \text{ Btuh}}{53,800 \text{ Btuh}} = 95.5\%$$

of the heat required at the outside design temperature of zero F. Chart 1 of Part 4 (September 1959) shows that a unit which supplies 95% of the calculated hourly heat loss will adequately heat the structure during all but 1% of the heating season.

Thus, the seasonal kw input to electric resistance heaters can be calculated as follows:

$$1 \text{ kw} \times (1\% \times 1324 \text{ hours}) = 13.2 \text{ kwh}$$

Coefficient of Performance (C.O.P.)

$$\text{C.O.P.} = \frac{51,200 \text{ Btuh}}{(60 \text{ F water}) \times 3.82 \text{ kw} \times 3413} = 3.93$$

Seasonal Heating Requirement

$$\begin{aligned} H &= KD \frac{h}{1000} \\ H &= 436.1 \text{ Btu per degree-day} \times \frac{53,800 \text{ Btuh}}{3584 \text{ degree-days} \times 1000} \\ H &= 84,000,000 \text{ Btu per season} \\ \text{Equivalent kwh} &= \frac{84,000,000}{3413} = 24,600 \\ \text{Total equivalent kwh per heating season} &= 24,600 \\ \text{Less supplemental heat kwh per season} &= 13 \\ \text{Total} &= 24,587 \text{ kwh} \end{aligned}$$

Continued on page 48

TABLE 1 — Factors for Heat Pump Installation in Tulsa, Okla., Food Store

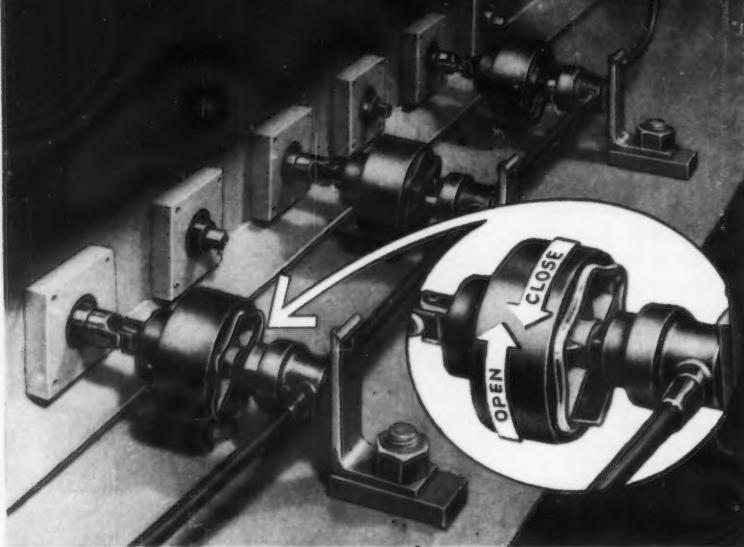
			Reference
"K" factor	436.1 Btu per degree-day	Table I, Part 6*	
Degree-days	3584	Table I, Part 6*	
Hours of heating plant operation in a normal year	1324 hours	Table I, Part 6*	
Structure heat loss at design temperature	53,800 Btuh	Assumed	
Ample well water available at	60 F		

*Heat Pump Primer series: Part 6, January, 1960.

TABLE 2 — Capacity of Water-to-air Heat Pump (Heating)

	60 F Water			62 F Water			64 F Water			66 F Water		
	Lvg. Air	Btuh	KW									
70 F Ent. Air	104 F	51,200	3.82	104.5 F	52,200	3.86	105 F	53,000	3.90	105.5 F	53,800	3.94
65 F Ent. Air	100 F	53,300	3.70	101 F	54,500	3.73	101.5 F	55,100	3.76	102 F	56,000	3.80
60 F Ent. Air	97 F	56,000	3.62	97.7 F	57,000	3.65	98.3 F	58,000	3.69	98.6 F	58,500	3.73

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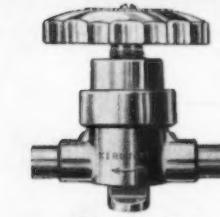
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Continued from page 47

Now,

$$\frac{24,587 \text{ kwh}}{3.93 (\text{C.O.P.})} = 6250 \text{ kwh heat pump input}$$

$$13 \text{ kwh supp. heat input}$$

$$6263 \text{ kwh input for total heating season}$$

Now let us assume that adequate 95 F discharge water is available from the water cooled condensers of the commercial refrigeration compressors in this store to mix with the 60 F well water available and warm it up to 66 F entering the heat pump.

The capacity of our heat pump at the same entering air condition now increases to 53,800 Btuh, but the input also rises some to 3.94 kw.

$$\text{C.O.P.} = \frac{53,800 \text{ Btuh}}{3.94 \text{ kw} \times 3413} = 4.0$$

(66 F water)

Now, since the capacity of the heat pump equals the structure heat, no supplemental heat is required.

Therefore, the total equivalent kwh per heating season (24,600 kwh) can be divided by the new C.O.P. (4.0) for 66 F water to get the new total heating season input.

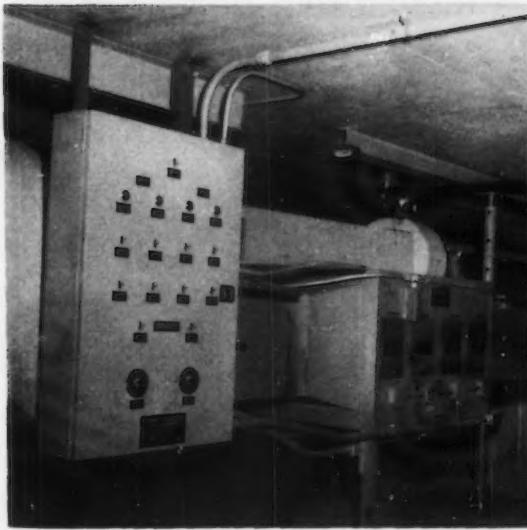
$$\frac{24,600 \text{ kwh}}{4.0} = 6150 \text{ kwh total input}$$

The 113 kwh saving in the heating season input to the heat pump represents approximately 2% of the season input.

The theory of heat conservation here is employed through the reuse of the warm condenser water to pre-heat the well water supply to the heat pump.

The savings is not great in this instance because of the type of example selected, but the equivalent of a 2% overall increase in the efficiency of a heating plant is certainly worth taking advantage of.

As a further example, consider what might be done with heat conservation in an industrial plant located in a cold climate where normally air-source heat pumps might be used. If utilizing waste steam or condensate would make it possible to design around water-to-air pumps with a constant heat source at 75 F, the savings would be considerable.



CONTROL BOX (at right) is used to regulate separate coils. Panels on each side of coil cover inspection windows.



HUMIDITY CONTROL is extremely important in this packaging room. Here, instant coffee is being packaged for shipment.

Separate Coils Solve Humidity Problem

IT'S NO SECRET that you can remove moisture from the air simply by reducing the temperature. But to maintain a constant moisture content of only 20 grains per lb. of air can be tough. Lee Richardson, Richardson & Richardson, Inc., Nutley, N.J., was asked to design a system which would maintain this strict humidity condition at the Mason-Keller Corp., Roseland, N.J., food and drug packaging plant.

This company packages many hydroscopic products, most of which are received in bulk in sealed containers. Moisture is the No. 1 enemy of such products. If they should be exposed to any moisture, or if any moisture should be present when they are sealed in the individual packages, these products would deteriorate.

Richardson designed a system capable of delivering air to the packaging room with a moisture content as low as 6 grains per lb. of air. The system circulates about 600 cfm of air in the 17 x 20' packaging room. 60 cfm fresh air is constantly introduced into the system.

Richardson realized that to produce the degree of dehumidification required, a coil would have to be operated at temperatures so low that it would ice up quickly. Then if it was shut off for defrosting, the humidity would rise. This would cause serious problems in the packaging operation.

To lick this problem he designed a system using two separate coils. He equipped this system with

the necessary controls so that when one coil is defrosting the other maintains the strict humidity requirements. The coil which is being defrosted is automatically pre-cooled before it is put back in service. This keeps the humidity from rising every time the system switches from one coil to another.

While the coils are defrosting they are cut out of the system completely so the moisture doesn't go back into the duct system, and so to the packaging room. As return air enters the system a damper diverts the air to the coil which is in use. A duplicate set of dampers assures closing off the ducts.

After the air is chilled it is passed through a reheat coil before being ducted to the packaging room.

Behind the insulated panels on the side of each coil, windows have been installed. These windows make possible a visual check in case of trouble. As a result, it isn't always necessary to tear down a coil or even take it out of service to effect some minor repair of adjustment.

All controls for the system are housed in a single control box. The changeover is completely automatic. Pilot lights on the control panel indicate the operating condition of the entire system.

All equipment is located in the basement area underneath the packaging room. Air is delivered to the packaging room through a duct system and wall register. Temperature of the room is maintained at a comfortable 72 F.



Now you can handle 90%
of your replacement control
calls with just 24 ...

NEW RANCO A30

Replacement Control Packages

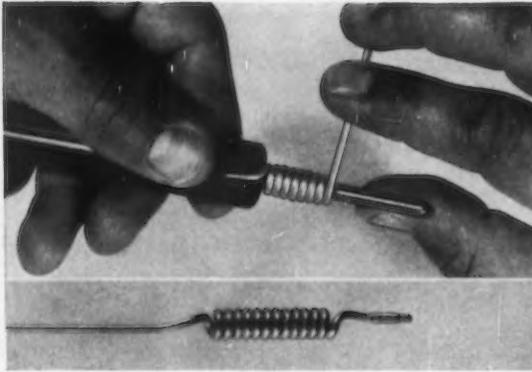
Imagine! Only 24 basic controls and installation packages and you're in business to handle 9 out of every 10 control calls. Installation is fast and simple . . . you've everything you need to do the job on the spot. And you know it will be done right the first time. You service more jobs per day, boost your weekly profits. Be sure to see your wholesaler about new A30 Replacements today!



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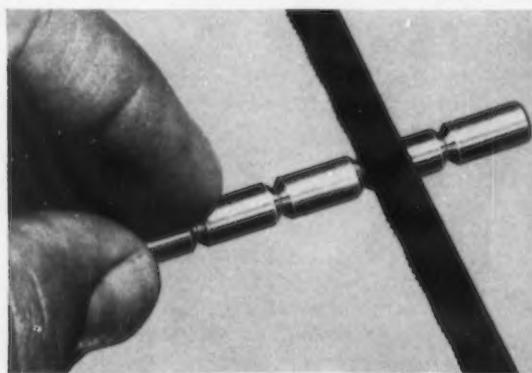
In Canada: Ranco Controls, Canada Ltd., Toronto 18, Ontario



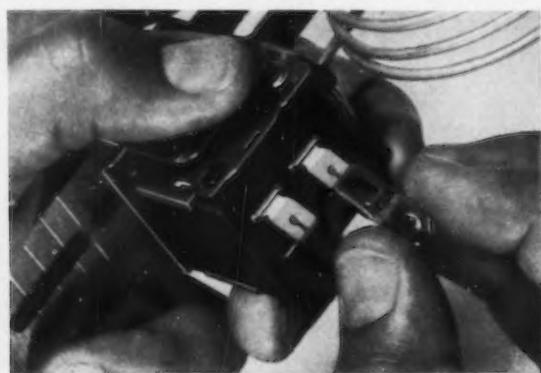
SHAPE the capillary tube (if necessary) with Ranco's new capillary forming tool available from your wholesaler.



ADJUST the mounting bracket on the new A30 Replacement for height and mounting hole spacings.



SAW dial shaft extension (unattached to control) to adapt it to any desired length and insert it in the Ranco A30 Replacement.



ADD terminal adapter clips (if necessary) and the A30 Replacement is ready for fast installation.

What You Should Know About Controlled Atmosphere

CONTROLLED ATMOSPHERE storage is steadily increasing as a means of prolonging both storage life and shelf life of apples. Continued research and development have demonstrated that this method of storage also helps minimize fruit disorders such as scald and brown core.

With more and more installations of this type in operation, it is becoming increasingly important for the refrigeration engineer to become familiar with

them so that he will be equipped to handle any installation or service problems that may come his way.

Some basic information on controlled atmosphere storage is offered by N.V. Amorosi, district engineer for Niagara Blower Co. He has worked with a number of contractors in planning the installation of such systems throughout the New York and New England area.

A typical controlled atmos-

sphere storage plant, Amorosi explains, consists of a gas-tight storage room coupled with refrigeration equipment of standard design.

The gas-tight room is filled with apples, and the door is sealed. Respiration of the fruit slowly reduces the oxygen level in the room, and would reduce it to zero if outside air were not introduced.

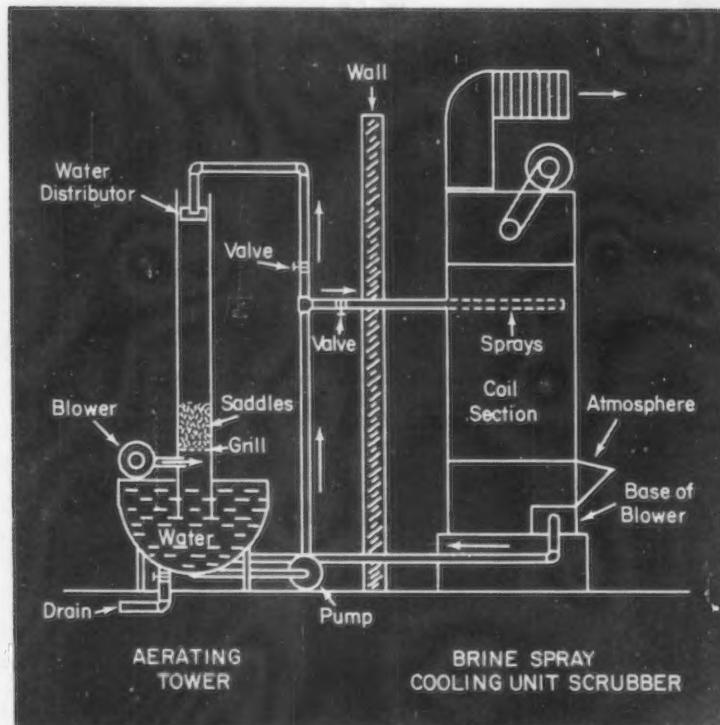
That's where the element of controlled atmosphere enters the picture, for enough outside air is introduced to hold the oxygen content of the room at 3%. Likewise, as the carbon dioxide content of the room rises, due to respiration, it is held at 3 to 5%, depending on the variety of apple. This is accomplished through use of a caustic soda washer or scrubber.

Two different methods of washing are used. One utilizes the scrubber outside the storage room. A blower draws atmosphere from the room up through a dripping solution of caustic soda and then returns it to the room.

The exterior scrubber offers the advantages of being readily accessible for repairs, and of having less spray drift. It also has several disadvantages, however. It uses a large volume of water; its scrubbing efficiency is not high; and the relative humidity in the room may not be as high as can be maintained with an interior scrubber.

All recent installations in the Hudson Valley and Connecticut, Amorosi reports, have used an interior scrubber because of

Continued on page 72



INTERNAL SCRUBBER SYSTEM with open tank provides aeration for removing carbon dioxide from water. In this one-pump setup water can be bypassed around aerating tower when carbon dioxide concentration runs too low. Air is blown up through a packed tower, countercurrent to the natural downward pull of air.

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circle 3 on reader service card

NOVEMBER 1960/THE REFRIGERATION & AIRCONDITIONING BUSINESS

Contractors

Business Management Experts To Speak At RACCA 1960 Miami Beach Convention

Business management topics will highlight the agenda at the annual Refrigeration & Air Conditioning Contractors Association Convention Nov. 19-22 at the Fontainebleau Hotel, Miami Beach, Fla.

Appearing on the program will be three representatives of Fails and Shepherd, management consultants from Raleigh, N.C.

Dr. Emol A. Fails will discuss "Imagination, Management, and the Sixties" and "Imagination, Management, and People." His first talk will forecast what

mation is used to make a profit. The second topic concerns studies on productiveness of the labor force and its corresponding relationship to the profit picture.

Shepherd, a partner with Dr. Fails, serves on the board of directors and is treasurer of Heating and Air Conditioning Research and Development Association, where he has correlated field and office forces and their activities for five years.

H. H. Ziglar's two talks are "Five Steps Up to the Sixties" and "Maximizing Satisfaction in the Sixties." In the first address, Ziglar will cover how to gear individuals to realize their potential and prepare for the opportunities of the Sixties. In the second speech he will analyze how to build satisfied customers through airconditioning sales. Emphasis will be placed on selling the benefits of airconditioning.

Ziglar is associated with Fails and Shepherd as a specialist in sales training and development.

Some important association business also will be transacted on November 18, the day before the formal convention opens. The Joint Industry Program Committee (JIPC), composed of presidents and managing executives of related contractor associations and representatives of the United Association (labor union) will meet under the chairmanship of Tom Alexander, RACCA president.

Representatives will be present from such organizations as Mechanical Contractors Association of America, National Association of Plumbing Contractors, and Pipe Fabricators Institute to resolve mutual problems.



Fails



Shepherd

to expect in the refrigeration and airconditioning industry in the Sixties and how to take advantage of opportunities that will come up. The second subject will cover all phases of employee-management relations.

Fails, a professor of salesmanship, economics, and accounting at North Carolina State College, is also executive secretary and director of research for Heating and Air Conditioning Research and Development Association.

D. S. Shepherd's subjects will be "The Sixties, Records, and Pricing" and "How Productive Is Productive Labor?" His first talk will stress the importance of having records; what type of records provide the needed information, and how this infor-

Preliminary meetings also will be held with committees of Air-Conditioning and Refrigeration Institute and Air-Conditioning and Refrigeration Wholesalers.

RACCA Chapter Adopts 6 Rules of Practice

Six basic rules of practice air-conditioning contractors are advised to follow have been adopted by Refrigeration and Air Conditioning Contractors Association of Southern California.

These procedures have also been approved by the association's board of directors. They are designed to meet requirements for the plan check of the heating, ventilating, and airconditioning code of Los Angeles.

The six steps include regulations concerning plans and specifications dealing with bid proposals, contract awards, plan check, and arrangements for members of the industry in compiling information on operation of the plan check.

RACCA Figures Show Hourly Rate Increase

An increase of 31½¢ in hourly service rate charges has been reported by Refrigeration and Air Conditioning Contractors Association of Southern California, Inc. A labor agreement signed earlier this year is reported as the cause of the upswing.

A breakdown of this increase, based on costs analyzed in March, is:

Increase in wages and fringe benefits	\$0.21½
Workmen's compensation increase01
Increase in costs of supervisors05
Miscellaneous01
Ten percent profit03
Total	\$0.31½

According to the association, many contractors are charging \$8.50 for labor, plus \$2-3 truck or mileage charge. Other rates vary from \$7.50-8.50. Those now having the \$8.50 plus \$3 rate reported no hourly rate increase until next spring.

"Changing Market" Chosen Main Theme of NCRSA Convention in New Orleans

How to sell and service your customers in a profitable manner will be brought out in a number of ways in several major topics to be discussed at the 14th annual convention of National Commercial Refrigeration Association. New Orleans, La., and its Royal Orleans Hotel will host attending NCRSA members who will gather there Nov. 27-29.

The convention theme is "Successful Selling In A Changing Market."

The proceedings will kick off on Sunday, Nov. 27, with a board of directors meeting, registration of delegates, a joint relations committee meeting, and an "early birds" reception.

Winther Speaks Monday

The first full business sessions will be held Monday. They will be opened by the introduction of Dudley M. Cawthon, NCRSA first vice president, as chairman of the meeting, and the report of executive secretary Marie H. Lawton. Ray H. Winther, president, will speak on "The Constant Change."

Other Monday talks will be on "How We Sell Voluntaries and Co-op Groups," by Philip W. Herman, vice president, Allied Store Equipment Co., Minneapolis, Minn.; "What Determines Our Equipment Purchasing Policies," by John Schwegmann, Jr., president, Schwegmann Bros. Giant Super Markets, Metairie, La.; and an address by Donald D. Denny, second vice president of the association, on "The Importance of Selling Profits Profitably."

Completing the Monday session will be a clinic on the service department. The clinic will

consist of Richard A. Rauch, sales manager, Gotham Equipment Corp., Richmond Hill, N.Y.; Foster Van Cleave, president, Friedrich Refrigeration Co. Div., SuperTex Corp., Ft. Worth, Texas; Milton M. Katz, Ever-Ready Refrigeration Co., Trenton, N.J.; R. J. Wischusen, president, Engineering & Refrigeration, Inc., Jersey City, N.J.; and Harry A. Hattenbach, president, Hattenbach Co., Cleveland, Ohio.

Financing on Agenda

Two round table conference sessions will make up the Tuesday meeting.

The first session will be on financing. It will include distributor financing, financing contracts, sources, charges, and results. Winther will introduce the subject.

The other conference session will be on publicizing distributors' services. It will be introduced by E. B. Ward, NCRSA third vice president, and will discuss all types of advertising, such as house organs, public relations, and open houses.

Tuesday afternoon, two NCRSA officers will address the convention. Cawthon will talk on "For Successful Sales Results. Distributors Should Take Every Precaution On Financing of 'Package' Deals," and treasurer H. E. Humphreys will speak on "The Necessity of Good Accounting Procedures in a Changing Market."

Election Ends Convention

Tuesday will see two other speeches. Topic of the one by C. V. Hill, chairman of the board, C. V. Hill & Co., Inc., Trenton, N.J., will be "The Zero

Degree Frozen Food Handling Code—Its Effect on the Food Store Operator and the Equipment Distributor." The second talk will be on "Successful Selling to the Non-Food Market Customer," by James A. Scatena, partner, Scatena York Co., San Francisco, Calif.

The convention will wind up with the election of officers and directors for the coming year.

Program for the ladies includes a coffee hour and "Mad Hatter" presentation Monday morning, as well as the reception and dinner that evening. A tour of New Orleans and a luncheon will be the features on Tuesday.

21 New Distributors Are Added by NCRSA

National Commercial Refrigerator Sales Association has signed 21 new distributors toward its goal of 350 for the year. They are A. F. Briggs Co., Portland, Me.; Ted Burton Co., Roanoke, Va.; California Market Equipment Co., Inc., Sacramento, Calif.; Crowley-Hill Co., Fresno, Calif.; Dieter Refrigeration Co., Youngstown, Ohio; Griner's Refrigeration, Cope-
mich, Mich.

Fred Griswold Co., Inc., Santa Barbara, Calif.; Grocer's Equipment Service, Greenville, Miss.; Hewitt Store Engineering Co., Bridgeport, Conn.; Hickman Sales, Inc., Ft. Lauderdale, Fla.; Oregon Equipment Co., Bend, Ore.; Raleigh Market Equipment Co., Raleigh, N.C.; Refrigeration Equipment, Inc., Pueblo, Colo.

Reno Bros., Beaver, Pa.; S. H. Shannon, Tampa, Fla.; Store Equipment Co., Waco, Texas; Tucker Refrigeration Co., Pine Bluff, Ark.; Turner's Refrigeration Contractors, Columbus, Ind.; Tyler-Sacramento Refrigeration Co., Sacramento, Calif.; Waigand Refrigeration Sales & Service, Nampa, Idaho, and Wilson Store Engineering, Elmira, New York.

**YOUR WHOLESALER
CAN SERVE YOU — LET HIM!**



WHOLESALE NEWS

Tools and Instruments—a growing market

"It used to be that I wouldn't stock any tool or instrument costing over \$10. Today I handle some costing more than \$250."

This statement was made by a member of Air-Conditioning & Refrigeration Wholesalers Region 5 at a recent meeting in Dayton, Ohio. It typifies the changing attitude of wholesalers generally toward the problems of supplying to the trade the tools and instruments necessary to properly analyze and repair today's complex refrigeration and airconditioning equipment.

Ned Mason, president of Mason Supply Co., Columbus, and Jim Downs, president of Refrigeration Supplies, Inc., Cleveland, led the discussion on "The Role of the Wholesaler in Supplying Tools and Instruments to the Trade."

A few years ago, the discussion brought out, the typical serviceman's tool box held maybe \$100 worth of tools at most, including the common run of hand tools, a test light, and some sort of leak detector.

This was all he needed to handle satisfactorily most of the jobs he was called upon to service. But now that so much equipment in the field incorporates more complicated and sensitive controls, and hermetically sealed units that cannot be investigated by eye, the serviceman needs more elaborate tools and instruments.

He still must have the hand tools, of course. But today's serviceman also is working with electrical instruments to help him check out electrical circuits and the internal operation of cooling systems. And he is working with more advanced and

precise leak detection equipment.

It is up to the wholesaler, Mason and Downs declared, to make these tools and instruments available to his customers. What's more, the wholesaler should thoroughly understand how they operate and how they should be used. This will make it possible for him to demonstrate them effectively.

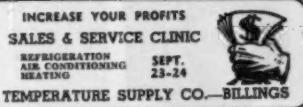
Two wholesalers at the meeting reported that tools and instruments now account for almost 10% of their total sales. It is important business to them.

They have placed these lines under the same sort of rigid inventory control that they use for valves or compressors. They have trained their salesman and countermen in the proper use of this equipment, for they have learned that the best way to sell it is to be able to demonstrate its value—to show the serviceman how it can make him more proficient in his work, and how it can put more money in his pocket.

145 Dealers Attend "Junior Trade Show"

An all-out promotion and publicity campaign helped attract 145 dealers to the first Sales & Service Clinic sponsored by Temperature Supply Co., Billings, Mont. Airconditioning, refrigeration and heating representatives from four states attended the 2-day event held this fall.

Temperature Supply used a variety of reminder stickers (one shown here) on all cor-



respondence well in advance of the event. All its personnel were instructed to talk up the show at every opportunity, whether in the field, over the counter, or by telephone.

Norm Sulenes, president, described the clinic as a "Junior Trade Show." "We had exhibits and factory personnel from 32 manufacturers," he said. "Most of the equipment on display was either a working model or a cut-away."

Continuous showings of educational movies were held during the show. Sulenes plans to hold similar "Showaramas" every other year in the future.

**YOUR WHOLESALER
CAN SERVE YOU—LET HIM!**

Two-Day Product Show Attracts 10,000

More than 10,000 trade and industry representatives attended the 40th anniversary product show sponsored by W. H. Kiefaber Co., Dayton, Ohio.

AN INDUSTRIAL EXHIBITOR gets his badge of identification pinned on by Nancy Benson, Kiefaber hostess, at W. H. Kiefaber's two-day product show. Paul Hopper (at right) makes sure Miss Benson gets the right badge on Bill Day, Gates Rubber Co., Denver, Colo.

Guests came from a radius of 100 miles to the two-day show, which featured 102 exhibitors. The show only was open to ticket holders.



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The new La Crosse FLAKE KING takes its place as a leader . . . in quality, trim, clean engineering and smooth, dependable performance. Attractively finished in grey hammertone baked enamel . . . stainless steel slide-away doors and storage bin...top water usage economy.

FLAKE KING CAPACITY . . . produces 550 lbs. of hard, dry ice every 24 hours . . . models available with storage capacities of 280 lb. and 470 lb. . . . fully automatic operation. WRITE TODAY for complete information.

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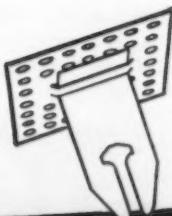
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USEFUL Literature

A SERVICE MANUAL for use with the "Niagara" carbonator has been published, with a spec sheet, by Selmix Dispensers, Inc. The manual lists operation principles, installation instructions, start up procedures, care and maintenance, a trouble-shooting guide, and a checklist of replacement parts for the product. Included is performance data on two models of the carbonator, Models 60-110 and 60-52.

circle 91 on reader service card

USES AND ADVANTAGES of flexible ducting for the air-conditioning industry are outlined in Catalog 40-49 published by Flexible Tubing Corp. Featuring "Thermalflex," the brochure lists the product's savings on installation costs, air flow characteristics, sizes, and methods of installation.

circle 92 on reader service card

CLEAN, FRESH CONDITIONED AIR is provided by "Centraire" line of airconditioning, heating, and ventilating units says Bulletin No. 404, released by Airtherm Mfg. Co. Photos, charts, graphs, tables, and specifications accompany headings on hot water and steam coil selection, and chilled water coil selection. Also general dimensions and specs on the line, including the Series 80 and Series 140.

circle 93 on reader service card

WHAT YOU NEED TO KNOW about filmstrips and slide-films is the title of a booklet published by Graphics Institute. Management men are given a picture of the benefits to be gained, problems to be faced, and procedures in setting up such a program. There are chapters on production costs, where and how to give such a show, and costs of projection equipment. Also, a specific case history is cited as an example of the public relations potential of a show. For a copy of the booklet, send \$1.00 to Graphics Institute, The Penthouse, 42 W. 39th St., New York 18, N.Y.

FOR AIRCONDITIONING ECONOMY use "Double-Flow Aquatowers" . . . that's the message on these cooling towers contained in a brochure issued by Marley Co. Specifically on the Series 15 type, engineering data, a cutaway model, and design features are given.

circle 94 on reader service card

CUTAWAY ILLUSTRATIONS in Dunham-Bush, Inc., Bulletin 6022 show the company's new line of packaged airconditioners. Included also are tables of capacity data, accessories, general and electrical specifications, condenser ratings, and piping and wiring diagrams.

circle 95 on reader service card

COMPLETE TECHNICAL DATA is given on furnace and airconditioner filters in a four-page bulletin issued by Standard Industries. The data includes filter maintenance and cleaning tips and charts illustrating dust pickup, pressure drop, and filter capacities of various sized filters.

circle 96 on reader service card

(More Useful Literature on page 58)

the companion to Thermobank...

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A NEW AUTOMATIC HOT GAS DEFROST SYSTEM

*for applications where
LOW FIRST COST
is the major consideration*



One fan evaporator with heat exchanger



Metering accumulator with brackets

If low first cost is the major factor, the new Kramer THAW SYSTEM offers more than any competitive system. (For sharp freezing loads, or where compressor is outdoors, Thermobank is recommended.)

- No compressor overloading with hold-back valve.
- Faster defrosting because more heat is available.
- Positively cuts liquid return to the compressor.
- Has the largest liquid accumulator.
- Foolproof metering device.
- No clogging with removable strainer.
- Oil problems eliminated by gravity drain.
- No unnecessary defrost cycles.
- Heated copper drain pan.
- Double pan to protect heating coil.
- Aluminum casing on evaporator.



Removable Strainer



Timer



Hot Gas Solenoid Valve



Hold-Back Valve



Hot Gas Strainer



Check Valve

Write for Catalog T-480

KRAMER TRENTON CO., Trenton 5, N. J.

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SOLDER ALUMINUM with ordinary soft solders

Here it is—a major breakthrough in aluminum fabrication—LA-CO Aluminum Flux. You can solder aluminum just like any of the common metals . . . using ordinary 40-60, 50-50, 60-40 or 95-5 solders . . . ordinary soldering irons or torches. Secret's in the remarkable fluxing action which achieves a perfect bond between aluminum and solder—as strong as the solder itself. Needs no cleaning, scraping, sanding . . . yet it is completely acid-free. There's nothing else like it!



Here's How!
LA-CO
Aluminum
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Production, service and maintenance men—write
for sample (on company letterhead, please).



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3082 W. Carroll Ave., Chicago 12, Ill.



with **S-K** ASSURED PREVENTIVE
MAINTENANCE

Where scale, corrosion, algae and slime are day-to-day problems . . . with Stiles-Karlsonite products for *assured preventive maintenance* . . . you'll increase the overall efficiency of all your equipment . . . reducing operating costs.

Through Karlsonite—a low cost efficient water conditioner—elements in water that prove harmful and damaging to equipment

are suspended and inactivated. You get crystal clear . . . non-corrosive . . . non-clogging . . . non-precipitating water . . . always at lowest cost!

Write today
for new
24-page
brochure . . .
with the
full story:

STILES-KARLSONITE CORPORATION
DEPT. SKB WAUKEGAN, ILLINOIS

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58

USEFUL LITERATURE

Continued from page 56

THE WHY'S OF THERMAL FELT, including its acoustical characteristics, are presented in Baldwin-Ehret-Hill's Bulletin J-661. Tables list available factory-applied facings and coatings, thermal conductivity of each standard density at various temperatures, and NRC specification range as well as sound absorption of each material. Standard widths and roll lengths for each density of "Fine-Fyber Felt" are also provided.

circle 97 on reader service card

"SO COMPLETELY NEW" is the title of Pamphlet S-315 issued by Bastian-Blessing Co. on its 4-model "Viewmatic" line of display cases. The bulletin lists 12 advantages, other merchandising benefits, specifications, and dimensions, all with photos, charts, engineering drawings, and schematic sketches.

circle 98 on reader service card

FAMILY HOME PLANNING and decorating can be simplified by using hydronic heating and cooling, according to a booklet published on "The Hydronic Home," by Bell & Gossett Co. By use of modern circulated water system, homeowners can benefit by the booklet's decorator ideas. Listed are the company's own hydronic system's elementary parts, including their technical data and capacities.

circle 99 on reader service card

AN APPLICATION GUIDE for Century Electric Co.'s motors has been issued by that company in Bulletin 270 B. The 16-page catalog details motor characteristics on polyphase, single phase, and direct current motors from 1/20 to 400 hp. There are also ratings, mounting dimensions, design features.

circle 100 on reader service card

21 SERIES OF PROPELLER FANS, their selection tables and accessories, are featured in a 20-page catalog (DB1-100) issued by Ilg Electric Ventilating Co. This catalog supersedes catalog 159. Also included are facts about types of bearings used on Ilg equipment, highlights of propeller fan construction, and a guide for selection of the right fan.

circle 101 on reader service card

PROTECT YOUR PROPERTY with metal identification tags is the message given in Bulletin 807 of Seton Name Plate Co., Inc. The pamphlet gives photographic examples of plates in use plus prices, choice of colors, and material.

circle 102 on reader service card

SEVEN WAYS BETTER are steel welding fittings manufactured by Nibco, Inc., so the company states in Catalog H-2. It lists new and previous fittings in the "Husky" line, along with flow charts, performance material, specifications, physical properties, and suggested working pressures. The 10-page brochure is 4-color.

circle 103 on reader service card

FOR A LONG LIFE is the design of General Electric Co.'s fractional hp shaded-pole fan motor. So says the company's Bulletin GEC-219F about its 51-frame, unit-bearing motor line. Illustrated with charts, photos, and diagrams, the release outlines testing procedures, construction, delivery, service, and ordering directions. Motor dimensions and operating data also are furnished.

circle 104 on reader service card

OFF-SEASON (Barrett)

Continued from page 37

question he might bring up. I assume the customer knows he'll get fine-line drawings from me after he signs a contract.

"Many times I don't go after a job right after it comes to our attention. After I make one sales call, I often let the job dangle until I feel it is ripe. I use this one call to feel out the customer and see if he's ready to do business. Of course, you've got to have confidence in yourself as a salesman in order to work this way."

Barrett emphasizes that a salesman must know that *he will sell the customer* when he walks in the door. "I keep my approach simple. Normally, I don't make a practice of trying to educate the customer. I feel he's more interested in what the equipment will do for him.

"When I walk in to talk to a customer, he knows why I'm there. I don't go to visit. And, I make it easy to buy from me," Barrett stresses.

"I make every job a good one. I never let the customer down. I don't make false statements, offer cut-rate prices, or use fancy gimmicks. Since I hope to get two sales leads from each job I install, I can't afford to do anything else. The fact that my business is growing and that people are being referred to me shows my customers believe in me and in my company."

NHAW Fall Convention Plans Being Completed

Plans are being completed for the fall convention of North-American Heating and Airconditioning Wholesalers Association to be held in Detroit, Mich., Nov. 27-30.

Based on the theme "Profit by Management for Profit," the convention will include workshop panel sessions, women-only meetings, a business conference program, and a "brainstorm" session.

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CAN SERVE YOU — LET HIM!**

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**EASIER • FASTER
MORE PROFITABLY**

Coldin Commercial Refrigerators are designed for action and satisfaction. Elegant styling plus quality-controlled custom construction makes them the outstanding line. Franchise facts available. Write today!



Your Key to
Better Refrigeration

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**AIRSERCO has the
BROADEST LINE**
of Instruments, Equipment, and Vacuum Pumps
in the Air Conditioning,
and Refrigeration industry.

Specify AIRSERCO PRODUCTS
and get "THE STANDARD OF
THE INDUSTRY" in . . .

- TESTING INSTRUMENTS
- PRECISION VISUAL MEASURING EQUIPMENT
- HIGH VACUUM PUMPS, GAUGES, AND ACCESSORIES

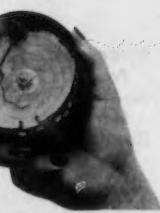
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"complete line"
from a test cord
to a full production
line facility.

"AIRSERCO... creative leader of the industry since 1933."



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See your wholesaler or write us for complete catalog.

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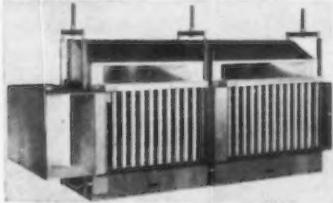
NEW Products

Duct furnace

Product: Complete line of sectional gas duct furnaces.

Manufacturer: Hastings Air Control, Omaha, Neb.

Features: Available with either aluminized or stainless steel heat exchangers. Models have capacities up to 300,000 Btu/h and may be close-



coupled for any total capacity. Comes with factory built by-pass section with adjustable damper. Optional equipment includes enclosed blower assemblies, modulating gas valves, 2-stage gas valves, and electric ignition.

circle 121 on reader service card

Condensate return pump

Product: Compact Model 60 condensate return pump.

Manufacturer: Kenco Pump Div., American Crucible Products Co., Lorain, Ohio.

Features: Has pumping capacity of 660 gph at 3' head, with heads up to 18'. Pump impeller is coupled directly to motor shaft and electrical components are sealed in non-conductors. Designed for 6-, 12-, and 32-v. operation. Furnished as non-automatic unit, with special control for fully automatic operation optional.

circle 122 on reader service card

Room airconditioner

Product: Self-contained, through-the-wall room airconditioner.

Manufacturer: Modine Mfg. Co., Racine, Wis.

Features: Utilizes hermetically-



sealed refrigerant cycle with heating coils. Electric heating element optional. Individual motors for blowers and condenser fans. Cooling capacities from 9000 to 12,000 Btu/h, heating from 14,900 to 24,400 Btu/h. Wall sleeves and outside louvers included with unit.

circle 123 on reader service card

Travel recorders

Product: Two trip and travel recorders that chart busy and idle time and speeds of service trucks.

Manufacturer: Service Recorder Co., Cleveland, Ohio.

Features: One model provides time record, speed, and total mileage covered by truck. Standard model records only busy or "down" time for



any period up to 7 days. Newer recorder can be preset to desired speed by driver. A red warning light comes on when he exceeds that speed. Standard model can be mounted anywhere in cab while speed selector can be attached to or separate from the standard recorder.

circle 124 on reader service card

Swedging tool

Product: Combination swedging tool.

Manufacturer: Robinair Mfg. Corp., Montpelier, Ohio.

Features: Single tool can expand six different tubing sizes to facilitate joining two separate tubes of the same size. Enlarges the inside of tube to fit over the outside of another tube the same size. Available for expanding 3/16, 1/4, 5/16, 3/8, 1/2, and 5/8" tubing.

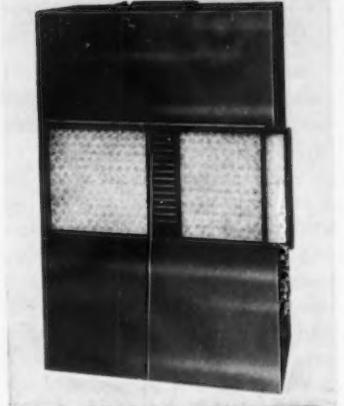
circle 125 on reader service card

Summer airconditioner

Product: "Moncrief" 5-ton water cooled summer airconditioner (Model H-512-W).

Manufacturer: Henry Furnace Co., Medina, Ohio.

Features: This self-contained unit can be used as add-on with forced air furnace or for summer airconditioning only. Shipped with top outlet



and slide-out filter frame for connection to ducts. Mounted with heavy steel frame. Circuit includes hermetically sealed, heavy-duty compressor, a cooling coil, and tube-in-tube condenser coil. Service valves, refrigerant drier, and fusible pressure-relief valve are standard. Cooling capacity rated at 64,000 Btu/h.

circle 126 on reader service card

Truck bodies

Product: New unitized welded series of truck bodies.

Manufacturer: Reading Body Works, Inc., Reading, Pa.

Features: All members of the bodies, including compartment panels and understructure, are electrically welded into an integral unit. Superstructures are die-formed of cold rolled steels of 12, 14, and 16 gage, and mounted on understructure of multiple, pressed steel U-beam girders. Die-formed ribbed front panel protects cab from shifting loads. Compartment capacities from 35 to 68 cu.ft.

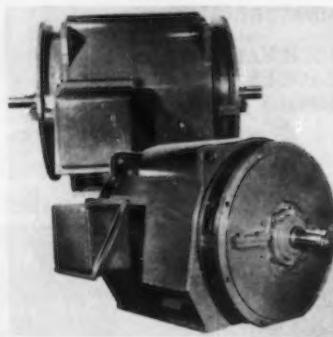
circle 127 on reader service card

Pump motors

Product: Two electric motors for high pressure pump applications.

Manufacturer: Wagner Electric Corp., St. Louis, Mo.

Features: Have mounting flanges similar to NEMA type "D" and shaft extensions to which pumps are mounted. Rated at 350 hp, 1160 rpm



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a comprehensive, quality line --
engineered for efficient performance,
carefully built for long life,
designed for easy servicing.



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THERMO PUMP



HEAT EXCHANGERS



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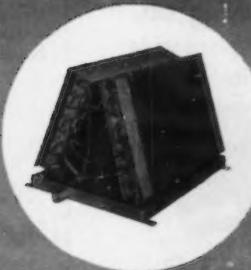
WATER SAVER
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AIR CONDITIONING UNITS



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THE REFRIGERATION & AIR CONDITIONING BUSINESS/NOVEMBER 1960



"My On-the-Job Money Makers — One-Trip Service — Less Inventory" Klixon® Star Replacement Kits for Domestic Refrigeration Service . . . 9 selected relays replace 159 standard relay ratings . . . 8 selected protectors replace wide variety of protector ratings . . . Leads and terminal screws included. Chart — H.P. and model number to relay number — on inside cover. Now available at your distributor. Write for informative folder.



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METALS & CONTROLS DIVISION
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SPENCER PRODUCTS: Klixon® Inherent Overheat Motor Protectors • Motor Starting Relays
Thermostats • Precision Switches • Circuit Breakers

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62

for operation on 3-phase, 60-cycle, 440-v. systems. Ventilating openings for splash-proof protection and four lifting eyes for safety and handling ease. Endplates built in two sections for disassembly and bearing inspection without removing rotor.

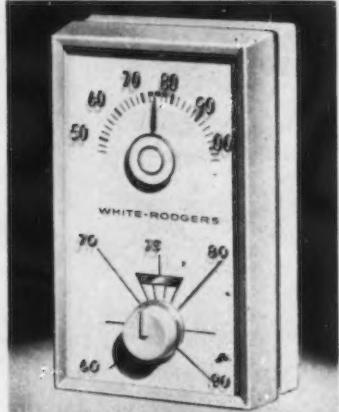
circle 128 on reader service card

Heating thermostat

Product: "MAINline" Type 110-215 heating thermostat.

Manufacturer: White-Rodgers Co., St. Louis, Mo.

Features: Sealed mercury contacts provide protection against dirt, dust,



and corrosion. Fixed heat anticipation achieved through removable carbon disc resistors. Two-degree markings in 70-80 degree zone. May be wall-mounted or on electrical outlet box. Temperature range 55 to 90 degrees, with differential of $\frac{1}{2}$ to $1\frac{1}{2}$ degrees.

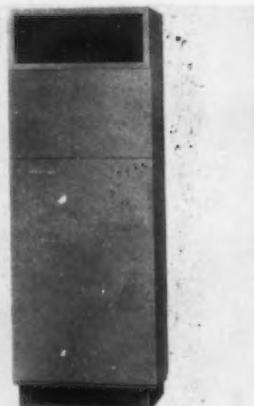
circle 129 on reader service card

Air handling units

Products: Fan-coil air handling units (Models 40AA004, 40AA006).

Manufacturer: Carrier Air Conditioning Co. Div., Carrier Corp., Syracuse, N.Y.

Features: Permits use of optional coil sizes and any quantity of air movement from 900 to 2500 cfm. Can be used in both heat pump and cool-



ing-only applications with ductwork or discharge plenum. Operates with 220 or 440 v. and single- and three-phase current in 4.6 kw, with light-weight fan motors of $\frac{1}{2}$ and $\frac{1}{3}$ hp.

circle 130 on reader service card

Pass-through refrigerator

Product: Full-vision pass-through meat refrigerator.

Manufacturer: Frigid Igloo Mfg. Corp., Yonkers, N.Y.

Features: Provides flexibility for storing and displaying mass packages of meat. Takes 30" meat pans placed



on adjustable wire shelves. Two twin fan blowers and forced-air circulating system provide maximum cooling and proper humidity. Available only in 6 and $11\frac{1}{2}$ lengths.

circle 131 on reader service card

Cooling coil

Product: 3-ton down-flow cooling coil.

Manufacturer: Lennox Industries, Inc., Marshalltown, Iowa.

Features: Nominal three-ton model for down-flow furnace with expansion valve and condensate eliminator. Supplements 2-ton model. Air resistance .098 iwg at 800 cfm to .245 iwg at 1400 cfm. Coil fins rippled edges and flat-bonded to seamless copper tubes.

circle 132 on reader service card

Air flow blowers

Product: "Bensair" line of axial air flow blowers.

Manufacturer: Benson Mfg. Co., Kansas City, Mo.

Features: Will handle from 1000 to more than 500,000 cfm with pressures from atmospheric to 10" of water static pressure with single-stage



units. Sizes from 12" dia. with fixed tension designs. Hub diameters from 14 to 40". Engineering drives available include belt, coupling, or direct drive.

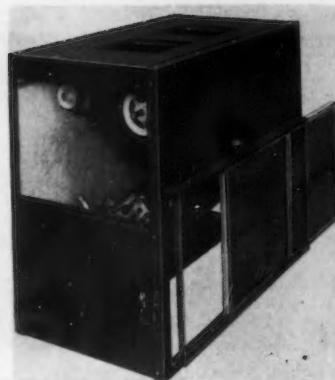
circle 133 on reader service card

Blower-coil unit

Product: "Luxaire Series BC" air-handling blower and cooling coil unit.

Manufacturer: C. A. Olsen Mfg. Co., Elyria, Ohio.

Features: Available in three sizes, 34,800, 45,000, and 56,600 Btuh cooling capacities for use with 3, 4, and 5 hp air-cooled condensing units. Can be connected to air diffusers for



service units on the job with GOLD SEAL LINE TAP VALVES

by 

Gold Seal Line Tap Valves are designed to instantly pierce tubing to provide a permanent port for testing, charging, and discharging refrigeration lines. Easily fastens from the top with 2 Phillips type screws. May be installed without refrigerant loss even while unit is operating.

Available in 6 sizes ranging from $3/16$ " O.D. to $5/8$ " O.D. Each size valve conforms to the line— Cannot bend or crimp the tube. Gold Seal Line Tap Valves offer maximum protection against leakage — Features Watsco's exclusive 3 point sealing.

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GOLD SEAL SWIVEL CONTROL VALVES

A lifetime tool designed to operate all size Line Tap Valves. Connects to Line Tap Valve without wrenches or special tools. The single port on the CV-1G is a connection for charging lines or gauges. The CV-2G has a double port which enables the user to connect a gauge and charging line to one or any number packaged refrigerant containers in series.

For additional information ask your wholesaler or write to Dept. B-11.



CV-1G CV-2G



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CHECK 3 TEMPERATURES AT ONE TIME

NEW! DUAL-RANGE

THERM-O-METER
Model 389-3L

(-50° to 100° F and
100° to 250° F)

Measures temperatures of gases, liquids and solids. Uses up to 3 leads for separate readings. Self shielded. Accuracy is $\pm 3^\circ$ F. Complete with one Thermistor Lead \$62.95 and Operator's Manual

Additional Thermistor Lead,
No. 0010 \$4.75

Carrying Case, No. 5262 \$9.95



TEMPERATURE METER, Model 385-3L

(-50° to +70° F)

Designed primarily for refrigeration equipment. Uses up to three 15' Thermistor Leads for separate readings. Accuracy $\pm 3^\circ$ F. Complete with one lead and Operator's Manual



Model 385-3L, similar to 389-3L, (-50° to 100° F) with one lead and Operator's Manual \$67.95

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FOR ACCURATE LOW-RESISTANCE CHECKS

LOW-OHM-METER
Model 362

Using only 5 ma (max), this instrument reads from 0.1 to 25 ohms with 3% accuracy of arc length. Ideal for testing armatures, fields,

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CHECKS SAFETY THERMOCOUPLES
ON GAS BURNER CONTROLS

MILLIVOLT METER
Model 387

Simple to use. Ranges are 10, 30, 100, 300, and 1000 millivolts. Accuracy is 3% of full scale from 50° to 120° F. With leads and Operator's Manual

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DIAGNOSES MOST ELECTRICAL TROUBLES

AC VOLT-AMP-WATTMETER,
Model 390

Checks line voltage, current drain, and power consumption. Accuracy, $\pm 5\%$ of full scale. Four wattage ranges cover practically any appliance. With break-in plug, leads, and Operator's Manual

\$48.95



TESTS VOLTAGE, POWER SIMULTANEOUSLY

AC-DC VOLT-WATTMETERS

Handy for testing appliance motors. Checks such things as shorted or open windings, and damaged bearings. Accuracy, $\pm 3\%$ of full scale.

Model 391, 3000 watts (max). \$43.95

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multiple room conditioning. Horizontal installation or vertical discharge, with either bottom or side air intake.

circle 134 on reader service card

Refrigerant can valve

Product: "Taps-All" Model No. UDV-200 valve for refrigerant in cans.

Manufacturer: Madden Brass Products Co., Aurora, Ill.

Features: For use on 1- and 2-lb. cans with standard tops. Has safety clamp assembly that attaches to can,



that won't slip or pop off, and that does not have to be driven on or off. Valve has forged brass body with metal handwheels. Seat provides positive, leakproof shut-off.

circle 135 on reader service card

Air intake units

Product: Vertical discharge air intake units.

Manufacturer: Hartzell Propeller Fan Co., Piqua, Ohio.

Features: Added to the black-out type roof ventilator fan housing are shutters, steam coil, filter house, and outlet diffusers. Four basic units give capacity range of 4000 to 36,000 cfm. Btu capacity at 5 lb. steam pressure ranges from 380,000 to 2,642,000 Btu/h.

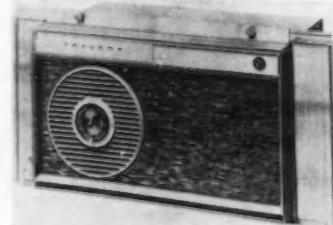
circle 136 on reader service card

Airconditioner timer

Product: "Climatimer" clock-timer for airconditioning units.

Manufacturer: Fedders Corp., Massapequa, N.Y.

Features: Can be pre-set to start airconditioner when owner is away



and also has electric clock built-in. A user wishing to turn the unit off but have it re-start at a later time sets timer and turns clock to automatic. Available on all models of 1961 line, which consists of models for double-hung and casement windows in capacities from 7000-20,000 Btu's.

circle 137 on reader service card

Condensing unit

Product: Two-stage, 9-ton condensing unit (Model RA-110).

Manufacturer: Rheem Mfg. Co., New York, N.Y.

Features: Has single dual-circuited "air-film" condenser and condenser blower with twin hermetic compressors. Separate controls for each compressor include time-delay relay to prevent both compressor motors from starting at once. Indicator shows when either half of unit has shut down on its safety control. Has control package for two-stage installations. Precharged refrigerant tubing with suction lines of 7/8"-dia. Each compressor draws 23 amp. at design conditions. Capacity of 110,000 Btu. Cabinet size 29 1/2" x 35 1/2" x 62".

circle 138 on reader service card

Space coupling

Product: "Sure-Flex" spacer coupling with detachable hubs.

Manufacturer: T. B. Wood's Sons Co., Chambersburg, Pa.

Features: Detachable hubs permit coupling of shafts as far apart as 7 1/2"



depending on coupling size. Consists of two flanges and 2-piece flexible rubber sleeve. Designed to withstand heavy shock. Sizes range from minimum stock bore of 3/8" to 3 1/2".

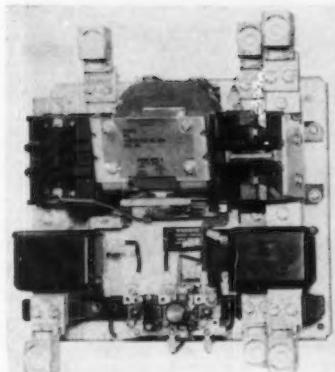
circle 139 on reader service card

Magnetic starter

Product: Compact size 5 magnetic starter.

Manufacturer: Cutler-Hammer Co., Milwaukee, Wis.

Features: Maximum dimensions are



13 x 15 3/16 x 6 1/8". Can be mounted in 8" deep enclosure. Parallel double-break contacts provide four contact points for heavy current loads. As overload protection, epoxy-cast current transformers and low current overload relays used. Has internal holding circuit interlock.

circle 140 on reader service card

Ice vendor

Product: "Crystal Tip" coin-operated ice vendor.

Manufacturer: American Automatic Ice Machine Co., Faribault, Minn.

Features: Has automatic defrosting

NOR-LAKE... "FINE-LINE" in every way!



UC-85 UTILITY CABINET

stores eggs, beer, package goods, farm produce. Big 85 cu. ft. capacity in this versatile money-saver. Uses only 62 1/2" x 48" valuable floor space. Sectional construction and special locking devices mean fast, easy assembly. Baked enamel exterior, galvanized interior with hardwood floor. Fine-Line styling, rugged construction throughout assures maximum economy and quality.

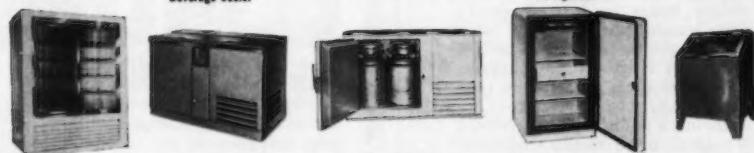


SD-58 SLIDING DOOR BEVERAGE COOLER

makes easy loading-unloading for schools, institutions and commercial users. Lift-out doors are stainless steel. Small (58" x 31" x 24 3/4") for under counter or island use holds big-capacity 12 1/2 cases of pop or 8 cases of 1/2 pt. milk cartons. Sides are baked-on enamel. Casters, cap-catcher, decapper are optional.



R 45 G Refrigerator LSCP-4 LoBoy Beverage Cooler DM 40 Dairy Mix Cabinet DL 200 Biological Refrigerator SB-24 Ice Storage Bin



ALL MODELS AVAILABLE IMMEDIATELY, IN STAINLESS STEEL IF DESIRED.



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For FREE illustrated information on Nor-Lake's full Fine-Line, write today.

Please rush FREE illustrated information on Walk-in Coolers
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This single compact kit



HAS EVERYTHING
YOU NEED!

- to install ...
- service ...
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\$43⁰⁰ complete

PREST-O-LITE Refrigeration and Air Conditioning Outfit

... includes three interchangeable open-flame stems, to give you just the right air-acetylene flame to solder, braze, or heat. Sensitive leak detector stem fits same torch handle, pinpoints tiniest halide gas leaks—as little as 100 parts in 1,000,000 parts air. Better than using soapy water!

Includes adjustable gas pressure regulator, torch handle and hose. Entire outfit in sturdy carrying case. Try it. See your supplier of LINDE products today. Or write Dept. 626 LINDE COMPANY, Division of Union Carbide Corporation, 270 Park Ave., N.Y. 17, N.Y.



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circle 31 on reader service card

66



with a time clock. Self-closing, vandal-proof service door keeps temperature constant, even during loading time. Walk-in door makes for convenient loading. Automatic counter records each sale. Bags of ice travel on automatic conveyor, and self-changing coin mechanism rejects slugs and foreign coins. Red light shows when machine is empty.

circle 141 on reader service card

Foam insulation

Product: "Expandofoam" foamed-in-place urethane insulation.

Manufacturer: Armstrong Cork Co., Lancaster, Pa.

Features: A chemical product supplied as two liquid components which

can be mixed and expanded into openings to form rigid urethane foam. Has high moisture and vapor resistance and low viscosity for easier handling. Will expand to density of 2 lb. per cu.ft. Initial thermal conductivity at that density averages 0.11 to 0.12. Will cure within 24 hours into stable foam. Yield strength is 25 to 30 lb. per sq.in.

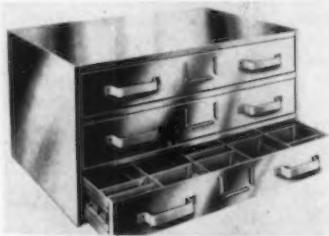
circle 142 on reader service card

Small parts cabinet

Product: Heavy-duty cabinet for storing small parts.

Manufacturer: Bay Products Inc., Philadelphia, Pa.

Features: Designed for parts such as very small carburetor and ignition parts, screws, washers, and springs. Each of 3 drawers sub-divided into



five, 3 x 11" compartments. Compartments have cross dividers. Each cross divider and drawer has label-holder for index cards. Made of steel

THIS COULD COST YOU PLENTY!

Trying to find your tools and equipment in some trucks can be an expensive, time-wasting game of "where-is-it". But not in a READING Utility Body! READING's "Magic Stowaway" compartments keep everything at your fingertips.

10 EXTRA QUALITY FEATURES!

Only READING gives you total quality construction at low mass production prices. See your truck dealer today or write direct for catalog and name of local distributor.

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and finished in gray baked enamel. Is 16% x 8% x 11%".

circle 143 on reader service card

Industrial drill

Product: Heavy duty industrial drill.

Manufacturer: Porter-Cable Machine Co., Syracuse, N.Y.

Features: Full ball bearing construction, weighing 5% to 5% lb. In



% to % sizes for drilling where lower speed and higher torque are required. Power transmitted to chuck by compound reduction gears. Auxiliary handle standard on three of six models offered.

circle 144 on reader service card

Water fountains

Product: Wall or floor-type water fountain.



Manufacturer: Sunroc Corp., Glen Riddle, Pa.

Features: Provides facilities for unrefrigerated drinking water, yet meets possible future need for cooled water. Conversion does not disturb initial installation and plumbing. Styled with stainless steel tops, sanitary push-button hand control, chrome-plated bubbler guard. Cabinet made of heavy welded steel with grey hamertone finish.

circle 145 on reader service card

Vertical manometer

Product: New line of inclined-vertical manometers for use with pilot tubes and in flow measurement.

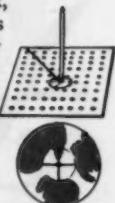
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SAVE MONEY**
with these dependable
**INSULATION
HANGERS**



GEMCO

Spindle Hangers and W-A Self-Locking Washers

Ideal for insulation work, Gemco Spindle Hangers are easily and quickly installed... with positive adhesion to concrete, brick or metal. W-A Self-Locking Washers pressed over spindles with minimum effort and lock insulation securely in place.



GEMCO Pronged Hangers

Designed especially for supporting various types of block insulation. Easily applied for positive adhesion. Prongs (available in various lengths from 1% to 6%) bend over to hold insulation firmly in place.

TUFF-WELD Nylon Hangers

Two-piece hangers... with bases of tough, mold nylon and spindles of metal. Made especially for smooth surfaces. Spindles snapped into bases as needed; reduces inventory, storage space, freight costs. W-A Self-locking washers hold insulation securely in place.

TUFF-BOND Quik-Set Adhesive (for smooth or slightly irregular surfaces) and Improved General Purpose Adhesive (for rougher surfaces) assure permanent adhesion of hangers when used as directed. Write or wire for details and specifications.

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EXCLUSIVE
'88'
FORMULA



NOW YOU CAN DO A REPAIR AND PREVENTATIVE MAINTENANCE JOB WHILE ADDING REFRIGERANT

SUPCO

REFRIGERANT — 12

Supco Refrigerant-12 will give a clean, dry charge of refrigerant. It will immediately lower running amperage due to friction control. Clean system of all sludges, acids, while charging. Keep expansion valves and capillary operating smoothly.

Supco Refrigerant-12 is available in one pound cans, with a MONEY-BACK GUARANTEE!

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Micromet® Plates form an invisible shield

Yes, Micromet Plates really protect a cooling water system. Used in a plastic mesh bag placed in the sump or hung in the recirculating water, one charge will protect most systems against scale and corrosion for six months. Low cost and easy to use, Micromet Plates are recommended by leading equipment manufacturers.

Micromet Plates—another Quality Calgon® Product available from your Refrigeration Wholesaler. Ask him about all the Calgon Products.

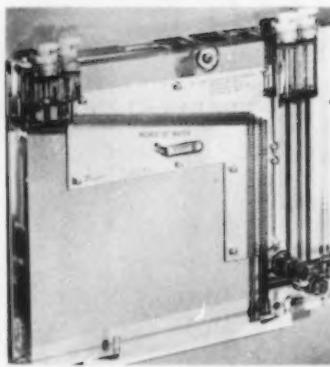
For free booklet on how to solve water problems, write:

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DIVISION OF HAGAN
CHEMICALS & CONTROLS, INC.
circle 10 on reader service card

68



Manufacturer: F. W. Dwyer Mfg. Co., Michigan City, Ind.

Features: Available in single and double column styles, stationary or portable. Various ranges to 23" of water. Accurate within + or - 1%. Made of clear acrylic plastic. Split aluminum boots inserts and machine screws hold scales securely to instrument, eliminating stripped threads. Only ground glass spirit levels used for top accuracy and sensitivity.

circle 146 on reader service card

Fastening tool

Product: "Shure-Set R-450" hammer-in fastening tool.

Manufacturer: Ramset Fastening System, Winchester-Western Div.,

SILVER SOLDER FLUX

NEW UNBREAKABLE PLASTIC BOTTLE

Plastic six-ounce bottle comes complete with brush-in-cap for easy application. Wabash Silver Solder Flux provides increased capillary action for faster, easier, and more satisfactory results. Less fumes, glare, and irritation to the skin. Other sizes available . . . write for prices.



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NOVEMBER 1960/THE REFRIGERATION & AIRCONDITIONING BUSINESS

Olin Mathieson Chemical Corp., New Haven, Conn.

Features: Tool handle extends away from barrel and striking surface for worker's safety. Designed for hard-to-reach places. Can be used to set fasteners into concrete or steel.

circle 147 on reader service card

Self-spraying enamel

Product: "A.S.A." gray enamel for spraying on machinery as touch-up or repainting.

Manufacturer: Sprayon Products, Inc., Cleveland, Ohio.

Features: Packed in 16-oz. aerosol cans, it comes in No. 325 dark gray



and No. 326 light gray. Two shades are equal, respectively, to ASA No. 49 and ASA No. 61. No paint booth required.

circle 148 on reader service card

Water-cooling tower

Product: Packaged water-cooling tower ("Permatower").

Manufacturer: Marley Co., Kansas City, Mo.

Features: Water distributor system is by gravity flow method, with



automatic bleed-off arrangement. Tower has waterproof laminated wood panels with resin coating. Line has nominal capacities of 5 to 80 tons.

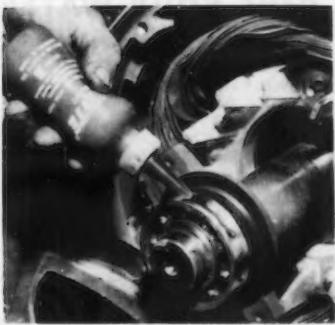
circle 149 on reader service card

Plastic sealant

Product: "Loctite" plastic sealant for replacement bearings and worn housings in electric motor end-bells.

Manufacturer: American Sealants Co., Hartford, Conn.

Features: Acts as a "liquid shim," fills clearance between bearing o.d. and worn end-bell housing, then hard-



ens for tight fit. Procedure for product use is wipe housing to remove lubricant; wipe o.d. of replacement bearing to remove grease and drop bearing into housing to check fit; remove bearing, spread sealant in housing and on bearing o.d. and assemble. Has compressive strength in 80,000 psi range.

circle 150 on reader service card

Ice machine

Product: Model SC 263-AC ice machine.

Manufacturer: Liquid Freeze Corp., Oakland, Calif.

Features: Uses about a pint of water for each pound of ice flakes pro-



duced. Flakes are sub-cooled, dry and hard. Unit has a capacity up to 1200 lb. per 24-hr. period. Condensing unit is 2 hp air-cooled, hermetic types. Dimensions 30 x 30 x 48".

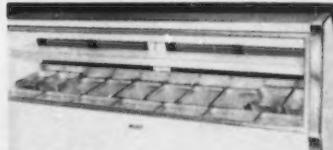
circle 151 on reader service card

Display case

Product: Two-shelf meat display case.

Manufacturer: Sherer-Gillett Co., Marshall, Mich.

Features: Improved for double duty. Available in 8 and 10' lengths. Always popular in lower volume markets, new styling of case lends further



THE REFRIGERATION & AIRCONDITIONING BUSINESS/NOVEMBER 1960

emphasis to the modern meat department featuring personalized service.

circle 152 on reader service card

Heat pump

Product: 2 hp self-contained pump (Model 315-21).

Manufacturer: Mueller Climatrol Div., Worthington Corp., Milwaukee, Wis.

Features: Measures 36 x 31 x 20-5/16". Develops 21,000 Btu/h heating and 22,000 Btu/h cooling. Supplementary electric resistance heat packages available in 8 or 12 kw capacities. Shipped assembled, pre-wired, pre-charged, and tested.

circle 153 on reader service card

Gas-powered units

Product: Natural gas-powered cooling units for airconditioning and refrigeration.

Manufacturer: Bell & Gossett Co., Morton Grove, Ill.

Features: Available in three basic cooling units for industrial and commercial use—package liquid cooler for water cooling systems; refrigeration condensing unit series, and engine compressor unit. Units operate quietly, inexpensively and create little vibration. Liquid cooler contains compressor, condenser, heat exchanger, centrifugal pumps, and evaporator. It

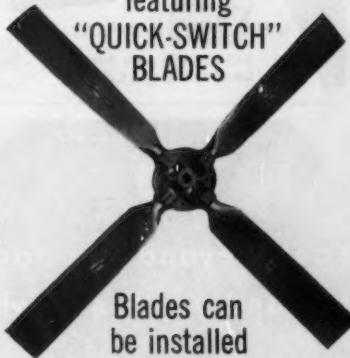
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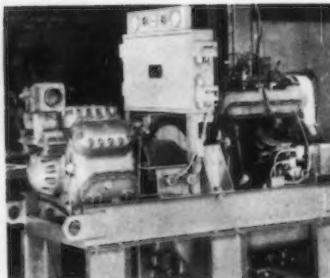


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Ice cream freezer

Product: "Brownie" soft ice cream freezer and milkshake server.

Manufacturer: Brown Mfg. Co., Inc., Pittsburgh, Pa.

Features: Model 95CW is a portable plug-in counter model. Model 97CW plugs in counter or stands. Both models are water-cooled and operate on 110 v. Air-cooled model is optional. No gaskets or grommets on either model. Model 95CW rated at 6 servings a minutes; 97CW at 7.

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NOVEMBER 1960/THE REFRIGERATION & AIR CONDITIONING BUSINESS

Auto Cooling Forum Scheduled for Dallas

Panel discussions on nine subjects will highlight the seventh annual National Forum of Automotive Air Conditioning convention, scheduled for the Sheraton Hotel, Dallas, Texas, Nov. 17-18.

The forum is sponsored jointly by the Texas section of Society of Automotive Engineers and the Automotive Air Conditioning Manufacturers Association.

Subjects on the agenda are general automotive design considerations, engine and assembly cooling, passenger compartment noise and vibration considerations, drive components, compressors, developments in thermo-electric design, electrical and control systems, design for compact and foreign cars.

BOOK REVIEW

Title: Training and Supervising Salesmen, 223 pages.

Author: Charles L. Lapp.

Publisher: Prentice-Hall, Inc., Englewood Cliffs, N.J.

Distributed by: Business Book Co., St. Louis, Mo.

Price: \$5.95.

Organizing for supervision, training for supervision, and controlling through supervision are the three main channels used by the author. The book shows management how to train and direct salesmen with profit instead of loss, and advises the sales manager how to obtain returns instead of turnover from personnel. Describes some of the pitfalls of too much or too little supervision. Intended as a practical guide for men responsible for supervising sales personnel.

Recold Corp. Honors 6 Veteran Employees

Six employees with a combined total service of 137 years have been honored by Recold Corp. H. T. (Hy) Jarvis, one of the company founders in 1928, instituted these awards.

In addition to Jarvis, other Recold employees honored and their lengths of service were Richard Jakob, 28 years; Elton Nodine, 25 years; Agnes Faessel, 10 years; Leonard Bass, 20 years, and Louis Grussmeyer, 26 years.

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CONTROLLED ATMOSPHERE

Continued from page 51

its efficiency, lower cost, and better humidity control. One type of interior scrubber used is the Niagara brine spray cooling unit illustrated in the accompanying drawing.

The spray cooler is mounted high enough in the storage room to provide gravity flow from the drain pan to an open tank outside the room. The caustic

soda solution is made in the tank and is pumped to the spray cooler. If the holding temperature in the controlled atmosphere room is 32 F, salt is used with the caustic soda solution in the tank.

This type of scrubbing uses only about half as much caustic soda as the exterior type. Recent developments have made it possible to aerate the water and lessen the amount of caustic soda required. In fact,

some aeration methods have entirely eliminated the caustic soda, except for the pull-down period.

In this particular setup the spray cooler is coated with a rubberized finish. If the spray cooler is used as a scrubber, the pump box and pump are omitted and an external pump is furnished.

Refrigerant and coil temperature and air movement should be such that a 90-95% relative humidity is maintained during the holding period. Air movement should approximate 1 cfm per box of fruit.

In storage rooms held at 38 F (for McIntosh, Northern Spy, and Macoun apples) it is advisable to use a back pressure control valve to maintain high coil temperature and high relative humidity. A brine spray cooler with ample coil surface will provide the high relative humidity needed, and will help the solution absorb the carbon dioxide in the refrigerated space.

The importance of proper maintenance for controlled atmosphere storage systems cannot be overemphasized, because once the room is filled and the door sealed shut it is necessary to wear an oxygen mask if you have to enter the room to make repairs.

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Field comments confirm our feeling that anything and everything worth having in a refrigeration thermometer has been designed into the Marsh "Serviceman"—truly master of all it surveys.

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And the Serviceman thermometer has looks, too! The easy-to-read precision dial also indicates Refrigerant-12 and -22 pressures on contrasting color scales and is regally set-off by a bright chrome bezel on an iridescent gun metal case—fully protected by a scratch-proof, forever clear Lucite crystal.

Available in two ranges: -10 to 100° F. and -40 to 65° F. The De Luxe Serviceman thermometer is the surest way to test thermostats, brine tanks and refrigerators. Put one in your service kit today!

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BOOK REVIEW

Title: Thermal Engineering.

Authors: Harry L. Solberg, Orville C. Cromer, Albert R. Spalding.

Publisher: John Wiley & Sons, Inc., New York City.

Price: \$9.50.

A revision and extension of "Elementary Heat Power" by the same authors, the book's overall theme is the first law of thermodynamics and its applications in the form of the energy balance. The material balance is applied to the combustion process and to the flow of fluids in machinery. Two new chapters are on the principles of heat transfer and the replacement by nuclear energy of fossil fuels. Major types of prime movers, heat exchangers, compressors, etc., are discussed as well as illustrative application exercises.

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THE REFRIGERATION & AIRCONDITIONING BUSINESS/NOVEMBER 1960

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Committee Selected For NWAH Convention

An arrangements committee of 16 Cleveland, Ohio, members has been formed for the 47th annual convention of National Warm Air Heating and Air Conditioning Association Nov. 14-16 at the Statler Hilton Hotel, Cleveland. Irv E. Seith, sales manager, Niagara Furnace Div., Forest City Foundaries Co., is chairman.

Serving with Seith are Bernard G. Kraus, Robert A. Jack, Herb F. Curtis, John Y. Petrie, William M. Roecker, Art Helmers, Karsten B. Solberg, D. J. Peterson, W. Harry Tonner, William R. Fleck, Edward P. Hayes, Ray Quiggin, Edward E. Harwood, Warren L. Edwards, and Charles H. Sharp.

Representative Named

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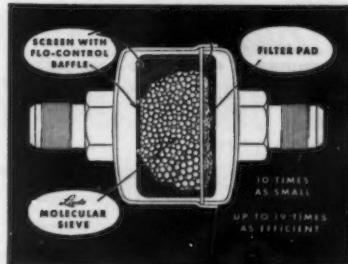
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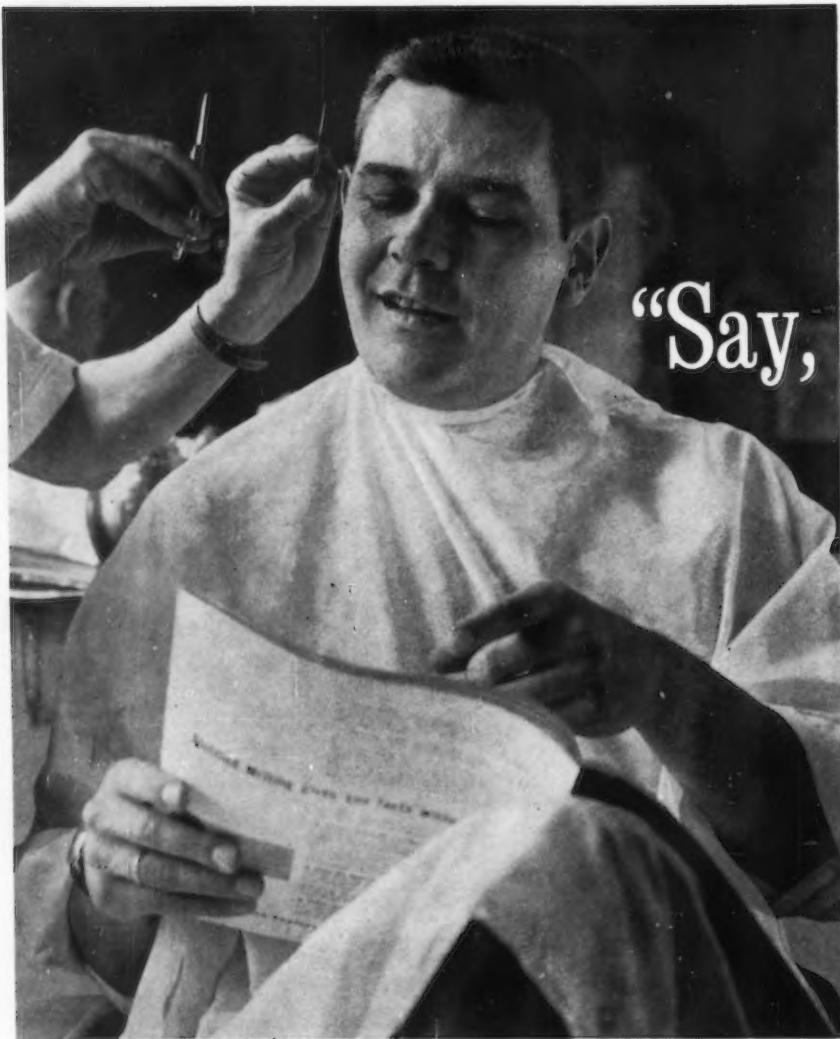
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